G11B

INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER

({ producing carriers of sound records for needle playback B29C 39/00 }) ; recording measured values in a way that does not require playback through a transducer G01D; photosensitive materials or processes for photographic purposes G03C; electrolygraphy, electrophotography, magnetography G03G; recording or playback apparatus using mechanically marked tape, e.g. punched paper tape, or using unit records, e.g. punched or magnetically marked cards, G06K; transferring data from one type of record carrier to another G06K 1/18; printing of data from record carriers G06K 3/00; arrangements for producing a permanent visual presentation of the output data G06K 15/00; arrangements or circuits for control of indicating devices using static means to present variable information G09G; coding, decoding or code conversion, in general H03M; circuits for coupling output of reproducer to radio receiver H04B 1/20; circuits (or arrangements) specially adapted for (pictorial or) television signal recording (H04N 1/21) , H04N 5/76, H04N 9/79; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor H04R)

NOTES

1. This subclass covers:
   • recording or playback of information by relative movement between a record track and a transducer, the transducer directly producing, or being directly actuated by, modulation in the track being recorded or played-back, and the extent of modulation corresponding to the signal being recorded or played-back;
   • apparatus and machines for recording or playback, and parts thereof such as heads;
   • record carriers for use with such apparatus and machines;
   • associated working of other apparatus with such apparatus and machines;
   • (relative positioning or movement of transducers and record carriers before, during or after transducing operation, e.g. for accessing record carriers or parts thereof, or for track change, selection or acquisition or for track following or for accessing parts of tracks);
   • (driving or moving of heads or record carriers or both heads and record carriers for increasing, maintaining or decreasing the relative speed before, during or after transducing operation)

2. In this subclass, the following terms or expressions are used with the meanings indicated:
   • “head” includes any means for converting sinusoidal or non-sinusoidal electric wave-forms into variations of the physical condition of at least the adjacent surface of the record carrier, or vice versa;
   • “record carrier” means a body, such as a cylinder, disc, card, tape, or wire, capable of permanently holding information, which can be read-off by a sensing element movable relatively to the record carrier.

3. Documents concerning relative positioning or movement of transducers and record carriers are classified in groups G11B 3/00 - G11B 7/00 and G11B 21/00 when only the transducer is controlled and in groups G11B 15/00, G11B 17/00 and G11B 19/00 when only the record carrier is controlled. When both record carrier and head are controlled, the documents are classified in G11B 15/1808, G11B 15/1816, G11B 19/00 and G11B 27/002.

When a plurality of record carriers are controlled, the documents are classified in G11B 15/68, G11B 17/08, G11B 17/22 and G11B 27/002.

4. By “access” is meant an operation including a relative movement for positioning between record carrier and head before, during or after transducing; this operation including “seek”, “select”, “change”, “acquire” and “follow” functions for at least a part of a track on at least one record carrier. By “programmed access” is meant a sequence of access operations the result of the sequence being to acquire a wanted sequence of parts of tracks or a wanted sequence of tracks. Relative movement between head and record carrier also covers the movement of a coupling beam such as a light beam between the head and a stationary record carrier.

5. “Movement of the head” also covers any virtual movement or any physical movement such as obtained by switching between successive transducing parts of the head or by moving the transducing zone of the head, i.e. by “scanning”. If different
transducing parts of the head are switchable, the number of transducing parts should be much smaller than the number of individual storage areas of the record carrier.

6. Attention is drawn to the notes of subclass G11C.

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

### 3/00 Recording by mechanical cutting, deforming or pressing, e.g. of grooves or pits; Reproducing by mechanical sensing; Record carriers therefor

- [G11B 11/00, (G11B 13/00)] take precedence;
- [recording by cutting or deforming using laser beam G11B 7/00, using electron beam G11B 9/10]

3/001 . . . . . . [with vibrating mechanical coupling means between pick-up element and sound producing element]

3/002 . . . . . . [element with stationary record carriers]

3/003 . . . . . . [Devices for transmitting, directing, amplifying sound (in general G11K 11/18)]

3/005 . . . . . . [through hollow arms]

3/006 . . . . . . [using horns]

3/007 . . . . . . [Devices for controlling sound, e.g. using acoustical impedances, using valves]

3/008 . . . . . . [for digital information]

3/02 . . . . . . Arrangements of heads (styli G11B 3/44)

3/04 . . . . . . Multiple, convertible, or alternative transducing arrangements

3/06 . . . . . . Determining or indicating positions of head

3/08 . . . . . . Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers (for transducing G11B 3/12, G11B 3/34)

3/085 . . . . . . using automatic means (G11B 3/095 takes precedence ; if particularly adapted for record-changers see G11B 17/16 and subgroups))

3/08503 . . . . . . [Control of drive of the head]

3/08506 . . . . . . [for pivoting pick-up arms]

3/08509 . . . . . . [using mechanical detecting means]

3/08512 . . . . . . [using optical detecting means]

3/08516 . . . . . . [using magnetic detecting means]

3/08519 . . . . . . [for pick-up arms moving parallel to itself]

3/08522 . . . . . . [using mechanical detecting means]

3/08525 . . . . . . [using optical detecting means]

3/08529 . . . . . . [using magnetic or electric detecting means]

3/08532 . . . . . . [for fixed arms carrying a movable head]

3/08535 . . . . . . [Driving the head]

3/08538 . . . . . . [the head being driven by the same means as the record can]

3/08541 . . . . . . [for pivoting pick-up arms]

3/08545 . . . . . . [driven by cams]

3/08548 . . . . . . [using friction coupling]

3/08551 . . . . . . [for the horizontal movement only]

3/08554 . . . . . . [for pick-up arms moving parallel to itself]

3/08558 . . . . . . [driven by belt or analogous element]

3/08561 . . . . . . [driven by non-skip driving means, e.g. lead screw]

3/08564 . . . . . . [the head being driven by means independent of the record carrier driving means]

3/08567 . . . . . . [for pivoting pick-up arms]

3/0857 . . . . . . [driven by means which support the pick-up arm]

3/08574 . . . . . . [the supporting element being different from the rotation-axes]

3/08577 . . . . . . [for the vertical movement only]

3/0858 . . . . . . [using mechanical means]

3/08583 . . . . . . [using electrical/magnetic means]

3/08587 . . . . . . [for pick-up arm moving parallel to itself]

3/0859 . . . . . . [driven by belt or analogous element]

3/08593 . . . . . . [driven by non-skip driving means, e.g. lead screw]

3/08596 . . . . . . [for fixed arms carrying a movable head]

3/09 . . . . . . using manual means only (G11B 3/095 takes precedence)

3/091 . . . . . . [using magnetic means (G11B 3/093 takes precedence)]

3/092 . . . . . . [using mechanical means (G11B 3/093 takes precedence)]

3/093 . . . . . . [Means coupled to the cover]

3/095 . . . . . . for repeating a part of the record; for beginning or stopping at a desired point of the record

3/0952 . . . . . . [using automatic means]

3/0955 . . . . . . [using mechanical means for detecting the end of the recording]

3/0957 . . . . . . [using optical means for detecting the end of the recording or the desired point thereof]

3/10 . . . . . . Arranging, supporting, or driving of heads or of transducers relatively to record carriers (guiding record carriers G11B 17/00, driving record carriers G11B 19/00)

3/12 . . . . . . Supporting in balanced, counterbalanced or loaded operative position (during transducing), e.g. loading in direction of traverse

3/121 . . . . . . [By using mechanical means not provided for in G11B 3/14, G11B 3/20, e.g. using cams]

3/122 . . . . . . [Providing horizontal force, e.g. anti-skating (G11B 3/124 takes precedence)]

3/124 . . . . . . [Damping means therefor]

3/125 . . . . . . [by using electric or magnetic means]

3/127 . . . . . . [Providing horizontal force, e.g. anti-skating force (G11B 3/128 takes precedence)]

3/128 . . . . . . [Damping means therefor]

3/14 . . . . . . by using effects of gravity or inertia, e.g. counterweight (G11B 3/28 takes precedence)
3/145 . . . (Providing horizontal force, e.g., anti-skating force (G11B 3/18 takes precedence))

3/16 . . . . adjustable

3/18 . . . . Damping by using viscosity effect
3/20 . . . . by elastic means, e.g., spring (G11B 3/28 takes precedence)

3/22 . . . . adjustable

3/24 . . . . acting to decrease pressure on record
3/26 . . . . acting to increase pressure on record
3/28 . . . . providing transverse bias parallel to record

NOTE see provisionally also G11B 3/14, G11B 3/20

3/30 . . . . Supporting in an inoperative position
3/31 . . . . Construction of arms [(for transmitting, directing or amplifying sound G11B 3/003)]
3/32 . . . . Construction or arrangement of support pillars
3/34 . . . . Driving or guiding during transducing operation
3/36 . . . . Automatic-feed mechanisms producing progressive transducing traverse across record carriers otherwise than by grooves, e.g., by lead-screw
3/38 . . . . Guiding, e.g., constructions or arrangements providing linear or other special tracking characteristics
3/40 . . . . Driving of heads relatively to stationary record carriers for transducing
3/42 . . . . with provision for adaptation or interchange of heads
3/44 . . . . Styli, e.g., sapphire, diamond
3/445 . . . . (Styli particularly adapted for sensing video discs)
3/46 . . . . Constructions or forms [Disposition or mounting], e.g., attachment of point to shank [(attachment of stylus directly to transducer H04R 1/16)]
3/48 . . . . Needles
3/50 . . . . Anvils or other supports opposing stylus forces
3/52 . . . . Arrangements permitting styli to yield under excessive pressure
3/54 . . . . Storing; Manipulating, e.g., feeding styli to and from heads (needle boxes, receptacles for needles B65D 85/24)
3/56 . . . . Sharpening (grinding B24B 3/00, B24B 19/00)
3/58 . . . . Cleaning record carriers or styli, e.g., removing shavings or dust [or electrostatic charges] (brushes A46B; cleaning in general B08B; [carrying-off electrostatic charges in general H05F 3/00])
3/5809 . . . . (during transducing operation)
3/5818 . . . . (for record carriers)
3/5827 . . . . [using means contacting the record carrier]
3/5836 . . . . [means connected to the pick-up arm or head]
3/5845 . . . . [means connected to a separate arm]
3/5854 . . . . [using means not contacting the record carrier]
3/5863 . . . . {connected to the pick-up arm or head}
3/5872 . . . . {connected to a separate arm}
3/5881 . . . . {for styli or needles only}

3/589 . . . . (before or after transducing operation)
3/60 . . . . Turntables for record carriers (forming rotor of dynamo-electric motor H02K)

NOTE contains no documents, see G11B 19/009

3/61 . . . . Damping of vibrations of record carriers on turntables

NOTE see provisionally also G11B 3/60, G11B 3/589 and G11B 17/02; contains no documents, see G11B 19/2018

3/64 . . . . Re-recording, i.e., transcribing information from one grooved record carrier onto one or more similar or dissimilar record carriers [(by varying the order of the information G11B 27/029, G11B 27/036)]

3/66 . . . . Erasing information, e.g., for reuse of record carrier
3/68 . . . . Record carriers
3/682 . . . . [comprising protective coatings, e.g., anti static, anti-friction]
3/685 . . . . [Intermediate mediums]
3/687 . . . . [Testing thereof (investigating chemical or physical properties of materials G01N)]
3/70 . . . . characterised by the selection of material or structure; Processes or apparatus specially adapted for manufacturing record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant places, e.g., B29D 17/00)

3/702 . . . . (for video discs with grooves (G11B 3/705 takes precedence))
3/705 . . . . (characterised by the selection of the material only)
3/707 . . . . (for video discs with grooves)
3/72 . . . . Groove formations, e.g., run-in groove, run-out groove
3/74 . . . . Multiple output tracks, e.g., binaural stereophonic
3/76 . . . . forming part of cinematograph films
3/78 . . . . Multiple-track arrangements
3/80 . . . . incorporating subsidiary guide means for heads, other than modulated grooves; Part-formed unmodulated grooves for conversion into transducing grooves
3/90 . . . . with means indicating prior or unauthorised use

5/00 Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor (G11B 11/00 (and G11B 13/00) take precedence)

NOTE Subgroups G11B 5/02 - G11B 5/86 take precedence over subgroups G11B 5/004 - G11B 5/016

2005/0002 . . . . [Special dispositions or recording techniques]
2005/0005 . . . . [Arrangements, methods or circuits]
2005/0008 . . . . [Magnetic conditionning of heads, e.g. biasing]
[Controlling recording characteristics of record carriers or transducing characteristics of transducers by means not being part of their structure]

5/00878 . . . {transducing different track configurations or formats on the same tape}
5/00882 . . . {configurations only, e.g. longitudinal and transverse}
5/00886 . . . {simultaneously}
5/00891 . . . {formats only, e.g. analog and digital}
5/00895 . . . {simultaneously}
5/016 . . . using magnetic foils
5/02 . Recording, reproducing, or erasing methods; Read, write or erase circuits therefor (timing or synchronising arrangements G11B 27/10)
5/022 . . . (H-Bridge head driver circuit, the "H" configuration allowing to inverse the current direction in the head)
5/024 . Erasing
5/025 . . . {Bulk erasing}
5/027 . . . Analogue recording
5/0275 . . . {Boundary displacement recording}
5/03 . . . Biasing
5/035 . . . Equalising
5/09 . . . Digital recording
5/10 . Structure or manufacture of housings or shields for heads
5/102 . . . {Manufacture of housing}
5/105 . . . Mounting of head within housing {or assembling of head and housing (G11B 5/3103 takes precedence)}
5/11 . . . Shielding of head against electric or magnetic fields
5/112 . . . {Manufacture of shielding device}
5/115 . . . Shielding devices arranged between heads or windings ((G11B 5/265) . G11B 5/29 take precedence)
5/127 . Structure or manufacture of heads, e.g. inductive
5/1272 . . . {Assembling or shaping of elements (G11B 5/1278 takes precedence)}
5/1274 . . . {with "composite" cores, i.e. cores composed in some parts of magnetic particles and in some other parts of magnetic metal layers
5/1276 . . . {including at least one magnetic thin film}
5/1278 . . . {specially adapted for magnetisations perpendicular to the surface of the record carrier}
5/133 . . . with cores composed of particles, e.g. with dust cores, with ferrite cores {with cores composed of isolated magnetic particles (in thin films G11B 5/31)}
5/1335 . . . {Assembling or shaping of elements}
5/147 . . . with cores being composed of metal sheets, i.e. laminated cores {with cores composed of isolated magnetic layers, e.g. sheets (in thin films G11B 5/31)}
5/1475 . . . {Assembling or shaping of elements (G11B 5/153 takes precedence)}
5/153 . . . with tape-wound cores
5/17 . Construction or disposition of windings
5/187 . Structure or manufacture of the surface of the head in physical contact with, or immediately adjacent to the recording medium; Pole pieces; Gap features (G11B 5/265, G11B 5/29) . G11B 5/31 (take precedence)
5/1871... [Shaping or contouring of the transducing or guiding surface]
5/1872... [for improving the form of the electrical signal transduced, e.g. compensation of "contour effect"]
5/1874... [specially adapted for composite pole pieces, e.g. for avoiding "pseudo-gap"]
5/1875... ["Composite" pole pieces, i.e. poles composed in some parts of magnetic particles and in some other parts of magnetic metal layers]
5/1877... [including at least one magnetic thin film]
5/1878... [disposed immediately adjacent to the transducing gap, e.g. "Metal-In-Gap" structure]
5/193... the pole pieces being ferrite [or other magnetic particles (G11B 5/1871 takes precedence; in thin film G11B 5/31)]
5/21... the pole pieces being of ferrous sheet metal [or other magnetic layers (G11B 5/1871 takes precedence; in thin film G11B 5/31)]
5/23... Gap features { (G11B 5/1871, G11B 5/1875, G11B 5/265, G11B 5/29, G11B 5/488 and subgroups, G11B 5/4907 and subgroups, G11B 5/4909 and subgroups take precedence) }
5/232... [Manufacture of gap]
5/235... Selection of material for gap filler { (G11B 5/232 takes precedence) }
5/245... comprising means for controlling the reluctance of the magnetic circuit [in a head with single gap, for co-operation with one track; (G11B 5/255 takes precedence; for plural gaps or plural tracks G11B 5/127, G11B 5/265, G11B 5/29, G11B 5/488 and subgroups, G11B 5/4907 and subgroups) ]
5/2452... [where the dimensions of the effective gap are controlled]
5/2455... [the magnetic circuit including at least one magnetic thin film of controllable properties (for scanning G11B 5/4938)]
5/2457... [disposed immediately adjacent to the gap ("composite" pole pieces G11B 5/1877)]
5/255... comprising means for protection against wear { (in thin film structures G11B 5/3106) }
5/265... Structure or manufacture of a head with more than one gap for erasing, recording or reproducing on the same track (G11B 5/33 takes precedence; in thin film structures G11B 5/31) ]
5/2651... {Manufacture}
5/2652... [with more than one gap simultaneously operative (with controlled single gap G11B 5/245)]
5/2654... [for recording or erasing]
5/2655... [with all the gaps disposed within the track or "guard band" between tracks, e.g. with erase gaps operative on track edges, with wide erase gap followed by narrow write gap]
5/2657... [all the gaps having the same dimension in the direction transverse to the track direction]
5/2658... [for recording with premagnetization or biasing of record carrier or head]
5/29... Structure or manufacture of unitary devices formed of plural heads for more than one track { (G11B 5/33, G11B 5/49 and subgroups take precedence; in thin film structure G11B 5/31) }
5/295... [Manufacture]
5/31... using thin films { (G11B 5/1274, G11B 5/1278, G11B 5/1874, G11B 5/1875, G11B 5/33, G11B 5/49 take precedence; magnetic thin film structures H01F 10/00) }
5/3103... [Structure or manufacture of integrated heads or heads mechanically assembled and electrically connected to a support or housing]
5/3106... [where the integrated or assembled structure comprises means for conditioning against physical detrimental influence, e.g. wear, contamination (G11B 5/3133 takes precedence)]
5/3109... [Details (G11B 5/3103 takes precedence)]
5/3113... [for improving the magnetic domain structure or avoiding the formation or displacement of undesirable magnetic domains]
5/3116... [Shaping of layers, poles or gaps for improving the form of the electrical signal transduced, e.g. for shielding, contour effect, equalizing, side flux fringing, cross talk reduction between heads or between heads and information tracks (G11B 5/3113, G11B 5/245 take precedence)]
5/312... [for reducing flux leakage between the electrical coil layers and the magnetic cores or poles or between the magnetic cores or poles]
5/3123... [by using special coil configurations or conductors]
5/3126... [using superconductors]
5/313... [Disposition of layers]
5/3133... [including layers not usually being a part of the electromagnetic transducer structure and providing additional features, e.g. for improving heat radiation, reduction of power dissipation, adaptations for measurement or indication of gap depth or other properties of the structure (G11B 5/3106 takes precedence)]
5/3136... [for reducing the pole-tip-protrusion at the head transducing surface, e.g. caused by thermal expansion of dissimilar materials]
5/314... [where the layers are extra layers normally not provided in the transducing structure, e.g. optical layers (G11B 5/3106 takes precedence)]
5/3143... [including additional layers for improving the electromagnetic transducing properties of the basic structure, e.g. for flux coupling, guiding or shielding (G11B 5/3116, G11B 5/312 take precedence)]
5/3146... [magnetic layers]
5/315... [Shield layers on both sides of the main pole, e.g. in perpendicular magnetic heads]
Details therefor G11B 5/133
for scanning G11B 5/4946
only }  ({ Single head using magnetic domains
{ i.e. for reproduction only; Combination of
-G11B 5/255
and subgroups } ; general
details therefor G11B 5/133
Erasing heads using permanent magnets ( general
using magneto-resistive devices { or effects }
Hall or Hall-related effect, e.g. planar-
harmonic; balanced flux head
with saturated jig, e.g. for detecting second
harmonic; balanced flux head
having vibrating elements
using galvano-magnetic devices, e.g. Hall-
effect devices (G11B 5/39 takes precedence)
{ using Hall or Hall-related effect, e.g. planar-
Hall effect or pseudo-Hall effect
[ in magnetic thin films
5/374 . . . . . . { Integrated structures
5/376 . . . . . . [ in semi-conductors (G11B 5/372 takes
precedence)
5/378 . . . . . . [ Integrated structures
5/39 . . . . . . using magneto-resistive devices { or effects
5/3903 . . . . . . using magnetic thin film layers or their
effects, the films being part of integrated
structures]
increase the relative speed (driving of both record
of heads, e.g. for scanning the record carrier to
support) relative to record carriers (mounting of
head arrangements); guiding record
structure of the head: see
protection against wear G11B 5/255
(testing of the manufacturing process
heads); (measuring electric or magnetic properties G01R
G11B 5/127
(heads); (testing of the manufacturing process
structures, e.g. { protective
disk drives (G11B 5/488
e.g. assembly prior to operation, hard or flexible
take { specially adapted for disk drive assemblies,
e.g. assembly prior to operation, hard or flexible
disk drives (G11B 5/488 - G11B 5/54 take
precedence))
[Mounting or aligning of arm assemblies, e.g. actuator arm supported by bearings, multiple arm assemblies, arm stacks or multiple heads on single arm (G11B 5/484 takes precedence)]
[Mounting, aligning or attachment of the transducer head relative to the arm assembly, e.g. slider holding members, gimbals, adhesive (G11B 5/484 takes precedence); details of head housings or structures G11B 5/10, G11B 5/127; adjustment relative to the record carrier G11B 5/56)
Piezo-electric devices between head and
arm, e.g. for fine adjustment]
[Structure of the arm assembly, e.g. load beams, flexures, parts of the arm adapted for controlling vertical force on the head (G11B 5/484 takes precedence)]
[Integrated arm assemblies, e.g. formed by material deposition or by etching from single piece of metal or by lamination of materials forming a single arm/suspension/head unit]
[Constructional details of the electrical connection between arm and support]
[Constructional details of the electrical connection between head and arm]
[with provision for mounting or arranging electrical conducting means or circuits on or along the arm assembly]
[the arm comprising an optical waveguide, e.g. for thermally-assisted recording]
[the arm comprising piezoelectric or other actuators for adjustment of the arm]
G11B

5/5513 . . . . [Specially adapted for transducing in both travelling directions of tape]
5/5517 . . . . [Controlled by automatic tape drive reversing arrangement (reversing tape drive arrangements G11B 15/444)]
5/5521 . . . . [across disk tracks (spiral track following G11B 5/596)]

NOTE
For groups G11B 5/5526 - G11B 5/5582, see provisionally G11B 5/5521 and G11B 5/556
5/5526 . . . . [Control therefor; circuits, track configurations or relative disposition of servo-information transducers and servo-information tracks for control thereof (G11B 5/556 takes precedence)]
5/553 . . . . . . [Details]
5/554 . . . . . . [Initialisation, calibration, e.g. cylinder "set-up"]
5/559 . . . . . . [Skew adjustment, e.g. adjustment of the position of the first sector in each track with respect to the other tracks, for improving, e.g. access performance]
5/5543 . . . . . . [servo-format therefor]
5/5547 . . . . . . ["Seek" control and circuits therefor (G11B 5/5556 takes precedence)]
5/5552 . . . . . . [using fine positioning means for track acquisition separate from the coarse (e.g. track changing) positioning means]
5/5556 . . . . . . [with track following after a "seek"]
5/556 . . . . . . [control circuits therefor]
5/5565 . . . . . . [system adaptation for compensation of variations of physical parameters, e.g. temperature]
5/5569 . . . . . . [details of specially adapted mobile parts, e.g. electromechanical control devices (motors in general H02K)]
5/5573 . . . . . . [Details of the magnetic circuit, e.g. of actuators]
5/5578 . . . . . . [Multiple actuators addressing the same disk, e.g. to improve data rate or access rate]
5/5582 . . . . . . [system adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock]
5/5586 . . . . . . [Minimising seek noise, e.g. actuator noise]
5/5591 . . . . . . [across drum tracks]
5/5595 . . . . . . [Control circuits therefor]
5/56 . . . . . . with provision for moving the head [support for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering (G11B 5/52, G11B 5/54, G11B 5/58 take precedence)]
5/58 . . . . . . with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following {spacing means incorporated in the head structure G11B 5/187, G11B 5/255, G11B 5/3106}
5/581 . . . . . . [maintaining desired contact or spacing by direct interaction of forces generated between heads or supports thereof and record carriers or supports thereof, e.g. attraction-repulsion interactions]
5/582 . . . . . . [interactions in a magnetic field]
5/583 . . . . . . [using repulsion generated by superconductors in a magnetic field, e.g. by "Meissner effect"]
5/584 . . . . . . for track following on tapes
5/588 . . . . . . by controlling the position of the rotating heads [by controlling the speed of the record carrier G11B 15/467; by controlling speed of the heads G11B 15/473; (by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement G11B 15/1841)]
5/592 . . . . . . using bimorph elements supporting the heads {see provisionally also G11B 5/588}
5/5921 . . . . . . [using auxiliary signals, e.g. pilot signals]
5/5922 . . . . . . [superimposed on the main signal]
5/5923 . . . . . . [recorded in horizontal suppression internal of video frame]
5/5925 . . . . . . [recorded in vertical suppression internal of video frame]
5/5926 . . . . . . [recorded in separate tracks, e.g. servo tracks]
5/59792 . . . . . . [Helicoidal tracks]
5/5928 . . . . . . [Longitudinal tracks]
5/596 . . . . . . for track following on disks {G11B 5/5526, G11B 5/5552, G11B 5/5565, G11B 5/5582 take precedence]

NOTE
For groups G11B 5/59605 - G11B 5/59633, see provisionally G11B 5/5521 and G11B 5/556
5/59605 . . . . [Circuits (G11B 5/59627 - G11B 5/59688 take precedence)]
5/59611 . . . . [Detection or processing of peak/envelop signals]
5/59616 . . . . [Synchronisation; Clocking (G11B 5/59622 takes precedence)]
5/5962 . . . . . . [Gain control; Filters]
5/5962 . . . . . . [Aligning for runout, eccentricity or offset compensation (G11B 5/5534, G11B 5/5977, G11B 5/59688 take precedence)]
5/59633 . . . . [Servo formatting (G11B 5/59627, G11B 5/59677, G11B 5/59683, G11B 5/59688 take precedence)]
5/59638 . . . . [Servo formatting apparatuses, e.g. servo-writers]
5/59644 . . . . [Acquisition or selection of servo format from a system reference (after track seek G11B 5/5556)]
G11B

5/5965 . . . . {Embedded servo format (G11B 5/59655 takes precedence)}
5/59655 . . . . {Sector, sample or burst servo format}
5/59661 . . . . {Spiral servo format}
5/59666 . . . . {Self servo writing}
5/59672 . . . . {Servo re-writing, e.g. for the correction of offsets or 'fading' of servo marks}
5/59677 . . . . {with optical servo tracking}
5/59683 . . . . {for magnetoresistive heads}
5/59688 . . . . {Servo signal format patterns or signal processing thereof, e.g. dual, tri, quad, burst signal patterns}
5/59694 . . . . {System adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock}
5/60 . . . . Fluid-dynamic spacing of heads from record-carriers
5/6005 . . . . {Specially adapted for spacing from a rotating disc using a fluid cushion}
5/6011 . . . . {Control of flying height}
5/6017 . . . . {using capacitive measurement}
5/6023 . . . . {using inductive measurement}
5/6029 . . . . {Measurement using values derived from the data signal read from the disk}
5/6035 . . . . {using electrostatic forces}
5/6041 . . . . {using magnetic forces}
5/6047 . . . . {using magnetostriective means}
5/6052 . . . . {using optical means}
5/6058 . . . . {using piezoelectric means}
5/6064 . . . . {using air pressure}
5/607 . . . . {using thermal means}
5/6076 . . . . {Detecting head-disk contact}
5/6082 . . . . {Design of the air bearing surface}
5/6088 . . . . {Optical waveguide in or on flying head}
5/6094 . . . . {Preventing or discharging electrostatic charge build-up on the flying head}
5/62 . . . . Record carriers characterised by the selection of the material (selection of magnetic materials in general H01F 1/00; thin magnetic films H01F 10/00)

NOTE

This group does not cover compositions, materials or processes, per se, which are covered by the relevant subclasses of section B or C.

5/627 . . . . of leaders for magnetic tapes, e.g. non-magnetic strips on the tapes or for connection (constructional features G11B 23/26)
5/633 . . . . of cinematographic films or slides with integral magnetic track
5/64 . . . . comprising only the magnetic material without bonding agent
5/642 . . . . {self supporting magnetic material, e.g. magnetisable wires}
5/645 . . . . {characterised by the film material}
5/647 . . . . {containing Fe or Ni (G11B 5/656 takes precedence)}
5/65 . . . . {containing Ni or Co (G11B 5/66 takes precedence)}
5/653 . . . . {containing Co (G11B 5/66 takes precedence)}
5/656 . . . . {containing Co}
5/66 . . . . {containing Ni}

5/667 . . . . including a soft magnetic layer
5/68 . . . . comprising one or more layers of magnetisable material homogeneously mixed with a bonding agent
5/70 . . . . on a base layer
5/7006 . . . . {comprising a magnetic layer on both sides covered with non-magnetic material}
5/7013 . . . . {characterised by the dispersing agent}
5/702 . . . . {characterised by the bonding agent}
5/7021 . . . . {containing a polyelephant or a polycyloisocyanate}
5/7022 . . . . {containing mixtures of polyurethanes or polyisocyanates with other polymers}
5/7023 . . . . {containing polyesters, polyethers, silicones, polyvinyl resins, polyaacrylresins or epoxy resins (G11B 5/7022 takes precedence)}
5/7025 . . . . {containing cellulotic derivates (G11B 5/7022 takes precedence)}
5/7026 . . . . {Radiation curable polymers}
5/7027 . . . . {Graft polymers}
5/7028 . . . . {Additives, e.g. crosslinking agents}
5/706 . . . . {containing Ni or Fe (G11B 5/70621 takes precedence)}
5/70621 . . . . {containing Ni or Fe (G11B 5/70621 takes precedence)}
5/70626 . . . . {containing non-magnetic substances}
5/70631 . . . . {containing a non-magnetic core}
5/70636 . . . . {containing a polyurethane or a polyether}
5/70642 . . . . {containing silicones}
5/70647 . . . . {containing silicones (G11B 5/70657 takes precedence)}
5/70652 . . . . {containing Co (G11B 5/70657 takes precedence)}
5/70657 . . . . {containing Co (G11B 5/70657 takes precedence)}
5/70663 . . . . {Preparation processes specially adapted thereof, e.g. using stabilising agents (G11B 5/70668 and G11B 5/70673 take precedence)}
5/70668 . . . . {containing a dopant}
5/70673 . . . . {containing Co}
5/70678 . . . . {Ferrites}
5/70684 . . . . {Ferro-ferroxydes}
5/70689 . . . . {Magnetite}
5/70694 . . . . {Non-stoechiometric ferro-ferroxydes, e.g. berthollide}
5/708 . . . . {containing Ni or Fe (G11B 5/70621 takes precedence)}
5/7085 . . . . {non-magnetic abrasive particles}
5/71 . . . . characterised by the lubricant
5/712 . . . . characterised by the surface treatment or coating of magnetic particles
5/714 . . . . characterised by the dimension of the magnetic particles
5/716 . . . . characterised by two or more magnetic layers
5/718 . . . . at least one on each side of the base layer
5/72 . . . . Protective coatings, e.g. antistatic, antifriction
5/722 . . . . {containing an anticoagulative material}
5/725 . . . . {containing a lubricant}
5/73 . . . Base layers, i.e. all non-magnetic layers lying under a lowermost magnetic recording layer, e.g. including any non-magnetic layer in between a first magnetic recording layer and either an underlying substrate or a soft magnetic underlayer

**WARNING**

Group G11B 5/73 is incomplete pending reclassification of documents from group G11B 5/7305.


All groups listed in this warning should be considered in order to perform a complete search.

5/7305 . . . (Frozen) {with bonding agent in the material}

**WARNING**

Group G11B 5/7305 is no longer used for the classification of documents as of May 1, 2019.

The content of this group is being reclassified into groups G11B 5/73, G11B 5/733, G11B 5/7334, G11B 5/736 - G11B 5/7377 and G11B 5/739 - G11B 5/73937.

All groups listed in this warning should be considered in order to perform a complete search.

5/731 . . . (Frozen) {without bonding agent in the material}

**WARNING**

Group G11B 5/731 is no longer used for the classification of documents as of May 1, 2019.

The content of this group is being reclassified into groups G11B 5/73, G11B 5/733, G11B 5/7334, G11B 5/736 - G11B 5/7377 and G11B 5/739 - G11B 5/73937.

All groups listed in this warning should be considered in order to perform a complete search.

5/7315 . . . (Frozen) {substrates}

**WARNING**

Group G11B 5/7315 is no longer used for the classification of documents as of May 1, 2019.

The content of this group is being reclassified into groups G11B 5/739 - G11B 5/73937.

All groups listed in this warning should be considered in order to perform a complete search.

5/7325 . . . (Frozen) {layers between substrate and first magnetic recording layer other than soft magnetic layers and seed layers}

**WARNING**

Group G11B 5/7325 is no longer used for the classification of documents as of May 1, 2019.

The content of this group is being reclassified into groups G11B 5/736 - G11B 5/7377 and G11B 5/739 - G11B 5/73937.

All groups listed in this warning should be considered in order to perform a complete search.

5/733 . . . (Frozen) characterised by the addition of non-magnetic particles { (base layers having a non-magnetic layer under a soft magnetic layer G11B 5/736; magnetic recording media substrates G11B 5/739)}

**NOTES**

1. {This subgroup covers: non-magnetic base layer structures characterised by the addition of non-magnetic particles.}

2. {This subgroup does not cover: magnetic layer structures comprising one or more layers of magnetisable material homogeneously mixed with a bonding agent (even when also containing non-magnetic particles), which are covered by G11B 5/68 (in particular, G11B 5/708 and G11B 5/7085).}

**WARNING**

Group G11B 5/733 is incomplete pending reclassification of documents from groups G11B 5/73 and G11B 5/7305.


All groups listed in this warning should be considered in order to perform a complete search.

5/7334 . . . (Frozen) {base layer characterised by composition or structure}

**WARNING**

Group G11B 5/7334 is incomplete pending reclassification of documents from groups G11B 5/73, G11B 5/7305, and G11B 5/733.

All groups listed in this warning should be considered in order to perform a complete search.
5/735 . . . characterised by the back layer [(magnetic recording media substrates G11B 5/739)]

**WARNING**

Group G11B 5/735 is impacted by reclassification into groups G11B 5/7353, G11B 5/7358 and G11B 5/7393.

All groups listed in this warning should be considered in order to perform a complete search.

5/7353 . . . . [for a thin film medium where the magnetic recording layer structure has no bonding agent]

**WARNING**

Group G11B 5/7353 is incomplete pending reclassification of documents from group G11B 5/735.

Groups G11B 5/7353 and G11B 5/735 are considered in order to perform a complete search.

5/7356 . . . . [comprising non-magnetic particles in the back layer, e.g. particles of TiO₂, ZnO or SiO₂]

**WARNING**

Groups G11B 5/7356 and G11B 5/7358 are incomplete pending reclassification of documents from group G11B 5/735.

All groups listed in this warning should be considered in order to perform a complete search.

5/7358 . . . . [specially adapted for achieving a specific property, e.g. average roughness [Ra]]

5/736 . . . . [Non-magnetic layer under a soft magnetic layer, e.g. between a substrate and a soft magnetic underlayer [SUL] or a keeper layer (magnetic recording media substrates G11B 5/739)]

**WARNING**


All groups listed in this warning should be considered in order to perform a complete search.

5/7361 . . . . [Two or more non-magnetic layers]

5/7362 . . . . [Physical structure of underlayer, e.g. texture]

5/7363 . . . . [Non-magnetic single underlayer comprising nickel]

5/7364 . . . . [Non-magnetic single underlayer comprising chromium]

5/7365 . . . . [Non-magnetic single underlayer comprising a polymeric structure, e.g. polymeric adhesion layer or plasma-polymerized carbon layer]

5/7366 . . . . [for heat-assisted or thermally-assisted magnetic recording [HAMR, TAMR]]

5/7367 . . . . [Physical structure of underlayer, e.g. texture]

5/7368 . . . . [Non-polymeric layer under the lowermost magnetic recording layer (base layers having a non-magnetic layer under a soft magnetic layer G11B 5/736; magnetic recording media substrates G11B 5/739)]

**WARNING**


All groups listed in this warning should be considered in order to perform a complete search.

5/7369 . . . . [Two or more non-magnetic underlayers, e.g. seed layers or barrier layers]

5/737 . . . . [Physical structure of underlayer, e.g. texture]

5/7371 . . . . [Non-magnetic single underlayer comprising nickel]

5/7373 . . . . [Non-magnetic single underlayer comprising chromium]

5/7375 . . . . [for heat-assisted or thermally-assisted magnetic recording [HAMR, TAMR]]

5/7377 . . . . [Physical structure of underlayer, e.g. texture]

5/7379 . . . . [Seed layer, e.g. at least one non-magnetic layer is specifically adapted as a seed or seeding layer]

5/739 . . . . [Magnetic recording media substrates]

**WARNING**


All groups listed in this warning should be considered in order to perform a complete search.

5/7391 . . . . [Inorganic substrates]

5/7393 . . . . [Composites or coated substrates]

5/7395 . . . . [Silicon compound based coating]

5/7397 . . . . [Metallic substrates, i.e. elemental metal or metal alloy substrates]
Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation (by modifying optical properties or the physical structure), reproducing using an optical beam at lower power (by sensing optical properties); Record carriers therefor; G11B 11/00, G11B 13/00 take precedence

2007/0003... (Recording, reproducing or erasing systems characterised by the structure or type of the carrier)
2007/0006... (adapted for scanning different types of carrier, e.g. CD & DVD)
2007/0009... (for carriers having data stored in three dimensions, e.g. volume storage)
2007/0013... (for carriers having multiple discrete layers)
2007/0016... (for carriers adapted to have label information written on the non-data side by the optical head used for data recording, e.g. lightscribe, labelflash)

7/002... Recording, reproducing or erasing systems characterised by the shape [or form] of the carrier
7/0025... with cylinders or cylinder-like carriers (or cylindrical sections or flat carriers loaded onto a cylindrical surface), e.g. truncated cones
7/003... with webs, [filaments or wires], e.g. belts, spooled tapes or films of quasi-infinite extent
7/0031... [using a rotating head, e.g. helicoidal recording]
7/0032... (for moving-picture soundtracks, i.e. cinema (cameras or projectors with sound recording or reproducing means G03B 31/02))
7/0033... with cards [or other card-like flat carriers, e.g. flat sheets of optical film]
7/0037... with discs
7/00375... [arrangements for detection of physical defects, e.g. of recording layer]
7/004... Recording, reproducing or erasing methods; Read, write or erase circuits therefor [(magneto-optical systems G11B 11/105)]
7/0045... (Recording G11B 7/006, G11B 7/0065 take precedence)
7/00451... (involving ablation of the recording layer)
7/00452... (involving bubble or bump forming)
7/00453... (involving spectral or photochemical hole burning)
7/00454... [involving phase-change effects]
7/00455... [involving reflectivity, absorption or colour changes]
7/00456... [Recording strategies, e.g. pulse sequences (G11B 7/0062 takes precedence)]]
2007/00457... [Two photon recording]
7/00458... [Verification, i.e. checking data during or after recording]
7/005... Reproducing (G11B 7/0065 takes precedence)
7/0051... (involving phase depth effects)
7/0052... (involving reflectivity, absorption or colour changes)
7/0053... (Reproducing non-user data, e.g. wobbled address, preprints, BCA)
7/0055... Erasing (G11B 7/006, G11B 7/0065 take precedence)
7/00552... [involving colour change media]
7/00555... [involving liquid crystal media]
7/00557 . . . [involving phase-change media]
7/006 . . . Overwriting (G11B 7/0065 takes precedence)
7/0062 . . . [Overwriting strategies, e.g. recording pulse sequences with erasing level used for phase-change media]
7/0065 . . . Recording, reproducing or erasing by using optical interference patterns, e.g. holograms
2007/00653 . . . [Collinear holography]
2007/00656 . . . [Counterpropagating holography]
7/007 . . . Arrangement of the information on the record carrier, e.g. form of tracks {, actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track]
2007/00709 . . . [Dimensions of grooves or tracks, e.g. groove depth, track pitch]
7/00718 . . . [Groove and land recording, i.e. user data recorded both in the grooves and on the lands]
2007/00727 . . . [where the information is modified to form a visible pattern, e.g. forming a label by modifying the width of pits or grooves]
7/00736 . . . [Auxiliary data, e.g. lead-in, lead-out, Power Calibration Area [PCA], Burst Cutting Area [BCA], control information (sector headers or addresses in prepits G11B 7/09245; address data in track wobble G11B 7/24082)]
7/00745 . . . [Sectoring or header formats within a track (formats in general G11B 20/12)]
2007/00754 . . . [Track shape, e.g. address or synchronisation information in wobbled track or sidewall]
2007/00763 . . . [Track cross-section, e.g. V-shaped, trapezoidal]
7/00772 . . . [on record carriers storing information in the form of optical interference patterns, e.g. holograms]
7/00781 . . . [Auxiliary information, e.g. index marks, address marks, pre-pits, gray codes]
7/0079 . . . [Zoned data area, e.g. having different data structures or formats for the user data within data layer, Zone Constant Linear Velocity [ZCLV], Zone Constant Angular Velocity [ZCAV], carriers with RAM and ROM areas]
7/013 . . . [for discrete information, i.e. where each information unit is stored in a distinct discrete location {, e.g. digital information formats within a data block or sector}]
2007/0133 . . . [Details of discrete information structures, e.g. shape or dimensions of pits, precepts]
2007/0136 . . . [where each location can have more than two values (‘multivalue’), for data or precepts]
7/08 . . . Disposition or mounting of heads or light sources relatively to record carriers
7/081 . . . [for time base error correction by moving the light beam]
7/082 . . . [Aligning the head or the light source relative to the record carrier otherwise than during transducing, e.g. adjusting tilt set screw during assembly of head]
7/083 . . . [relative to record carriers storing information in the form of optical interference patterns, e.g. holograms]
7/085 . . . with provision for moving the light beam into, or out of, its operative position {or across tracks, otherwise than during the transducing operation, e.g. for adjustment or preliminary positioning or track change or selection} (modulating by information signals G11B 7/12; controlling the position or direction of light beams, i.e. deflection, G02F 1/20)
7/08505 . . . [Methods for track change, selection or preliminary positioning by moving the head]
7/08511 . . . [with focus pull-in only]
7/08517 . . . [with tracking pull-in only]
7/08523 . . . [with both tracking and focusing pull-in]
7/08529 . . . [Methods and circuits to control the velocity of the head as it traverses the tracks]
7/08535 . . . [to maintain constant velocity during the traverse]
7/08541 . . . [involving track counting to determine position]
7/08547 . . . [Arrangements for positioning the light beam only without moving the head, e.g. using static electro-optical elements]
7/08552 . . . [using electro-optical elements]
7/08558 . . . [using acousto-optical elements]
7/08564 . . . [using galvanomirrors]
7/0857 . . . [Arrangements for mechanically moving the whole head]
7/08576 . . . [Swinging-arm positioners]
7/08582 . . . [Sled-type positioners]
7/08588 . . . . . . [with position sensing by means of an auxiliary system using an external scale]
7/08594 . . . . [to access both sides of the disc with the same head assembly]
7/09 . . . [with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following]
7/0901 . . . [for track following only (G11B 7/0925, G11B 7/094, G11B 7/0941, G11B 7/0943, G11B 7/0945, G11B 7/0946, G11B 7/0948 take precedence)]
7/0903 . . . [Multi-beam tracking systems]
7/0904 . . . [Dithered tracking systems]
7/0906 . . . [Differential phase difference systems]
7/0908 . . . [for focusing only (G11B 7/0925, G11B 7/094, G11B 7/0941, G11B 7/0943, G11B 7/0945, G11B 7/0946, G11B 7/0948 take precedence)]
7/0909 . . . [by astigmatic methods]
7/0911 . . . [by far-field method]
7/0912 . . . [by push-pull method]
7/0914 . . . [by non-optical methods, e.g. capacitive]
7/0916 . . . [Foucault or knife-edge methods]
7/0917 . . . [Focus-error methods other than those covered by G11B 7/0909 - G11B 7/0916]
2007/0919 . . . [Critical angle methods]
2007/092 . . . [Dither methods]
2007/0922 . . . [Far-field methods]
2007/0924 . . . [Skewed beams methods (using an angled beam, i.e. a beam which is reflected from the disc at an angle different from 90°)]
7/0925 . . . [Electromechanical actuators for lens positioning (G11B 7/0857 takes precedence)]
modulating G02F 1/00

independent light source, e.g. switching gating or

or direction of light beams arriving from an

controlling the intensity, colour, phase, polarisation

method G11B 7/08

beam or detector, irrelevant to the transducing

modulation of the optical beam (disposition or

{ ; modulating lasers H01S 3/10

Heads, e.g. forming of the optical beam spot or

)}

and detectors mounted on the same substrate

Integrated head arrangements, e.g. with source
type in magnetic recording

Flying-type heads, e.g. analogous to Winchester

with the record carrier

Protecting the head, e.g. against dust or impact

perturbations not related to the carrier or servo

sequences }

{ specially adapted for detection and avoidance

beam, e.g. vibration }

{ Methods for servo offset

compensation }

{ Methods and circuits for servo gain or phase

compensation during operation (for initialising

servos G11B 7/0945)}

{ Methods and circuits for performing

mathematical operations on individual detector

segment outputs }

{ Methods for initialising servos, start-up

sequences }

{ specially adapted for operation during external

perturbations not related to the carrier or servo

beam, e.g. vibration }

{ specially adapted for detection and avoidance

or compensation of imperfections on

the carrier, e.g. dust, scratches, dropouts

(G11B 7/0953 takes precedence) }

specially adapted for discs, e.g. for

compensation of eccentricity or wobble

{ to compensate for eccentricity of the disc or
disc tracks }

{ to compensate for tilt, skew, warp or

inclination of the disc, i.e. maintain the

optical axis at right angles to the disc }

Interchangeable mountings, e.g. for replacement

of head without readjustment [including

interchangeable electrical adjuster boards]

Heads, e.g. forming of the optical beam spot or

modulation of the optical beam (disposition or

mounting of head elements within housing or

with provision for moving of light source, optical

beam or detector, irrelevant to the transducing

method G11B 7/08 { ; modulating lasers H01S 3/10:

controlling the intensity, colour, phase, polarisation

or direction of light beams arriving from an

independent light source, e.g. switching gating or

modulating G02F 1/00)}

Protecting the head, e.g. against dust or impact

with the record carrier

Flying-type heads, e.g. analogous to Winchester
type in magnetic recording

Integrated head arrangements, e.g. with source

and detectors mounted on the same substrate

the integrated head arrangements including

waveguides

the waveguides including means for

electro-optical or acousto-optical deflection

{(electro- or acousto-optical deflection in
general G02F 1/29, G02F 1/33)
7/1381 . . . Non-lens elements for altering the properties of the beam, e.g. knife edges, slits, filters or stops (G11B 7/1353, G11B 7/1369 take precedence)
7/1384 . . . Fibre optics
7/1387 . . . using the near-field effect
7/139 . . . Numerical aperture control means
7/1392 . . . Means for controlling the beam wavefront, e.g. for correction of aberration ((optical systems for aberration correction per se G02B 27/00))
7/13922 . . . [active, e.g. controlled by electrical or mechanical means]
7/13925 . . . [during transducing, e.g. to correct for variation of the spherical aberration due to disc tilt or irregularities in the cover layer thickness]
7/1395 . . . Beam splitters or combiners (G11B 7/1353, G11B 7/1356 take precedence ; beam splitting or combining per se G02B 27/10))
7/1398 . . . Means for shaping the cross-section of the beam, e.g. into circular or elliptical cross-section
7/14 . . . specially adapted to record on, or to reproduce from, more than one track simultaneously
7/22 . . . Apparatus or processes for the manufacture of optical heads, e.g. assembly
7/24 . . . Record carriers characterised by shape, structure or physical properties, or by the selection of the material (characterised by the arrangement of information on the carrier G11B 7/007)
2007/240004 . . . [characterised by the form of the carrier]
2007/240008 . . . [Cards]
2007/240012 . . . [intended for rotation]
2007/240017 . . . [Tapes]
2007/240021 . . . [Cylinders]
2007/240025 . . . [for storing optical interference patterns, e.g. holograms]
7/24003 . . . Shapes of record carriers other than disc shape
7/24006 . . . Cylindrical or shaft-shaped
7/24009 . . . Tapes, long films or long sheets
7/24012 . . . Optical cards
7/24015 . . . Air-sandwiched discs

NOTE
When classifying in this group, classification is also made in group G11B 7/2403 if the subject matter disclosed in the context of an air-sandwiched disc is of more general application
7/24018 . . . Laminated discs (G11B 7/24015 takes precedence)

NOTE
When classifying in this group, classification is also made in group G11B 7/2403 if the subject matter disclosed in the context of a laminated disc is of more general application
7/24021 . . . provided with a special shape or structure for centering or eccentricity prevention, e.g. alignment
7/24024 . . . Adhesion or bonding, e.g. specific adhesive layers
7/24027 . . . Layers; Shape, structure or physical properties thereof (G11B 7/24021, G11B 7/24024 take precedence)
7/2403 . . . Layers; Shape, structure or physical properties thereof
7/24033 . . . Electrode layers
7/24035 . . . Recording layers (substrates also used as recording layers G11B 7/24047)
7/24038 . . . Multiple laminated recording layers
7/24041 . . . with different recording characteristics
7/24044 . . . for storing optical interference patterns, e.g. holograms; for storing data in three dimensions, e.g. volume storage (G11B 7/24038 takes precedence)
7/24047 . . . Substrates
7/2405 . . . being also used as track layers of pre-formatted layers (tracks or pits G11B 7/2407)
7/24053 . . . Protective topcoat layers lying opposite to the light entrance side, e.g. layers for preventing electrostatic charging
7/24056 . . . Light transmission layers lying on the light entrance side and being thinner than the substrate, e.g. specially adapted for Blu-ray® discs
7/24059 . . . specially adapted for near-field recording or reproduction
7/24062 . . . Reflective layers
7/24065 . . . Layers assisting in recording or reproduction below the optical diffraction limit, e.g. non-linear optical layers or structures (cover layers for near-field media G11B 7/24059)
7/24067 . . . Combinations of two or more layers with specific interrelation
7/2407 . . . Tracks or pits; Shape, structure or physical properties thereof (layout of tracks or pits used as the identification information G11B 7/007)
7/24073 . . . Tracks
7/24076 . . . Cross sectional shape in the radial direction of a disc, e.g. asymmetrical cross sectional shape
7/24079 . . . Width or depth (G11B 7/24076 takes precedence)
7/24082 . . . Meandering
7/24085 . . . Pits
7/24088 . . . for storing more than two values, i.e. multi-valued recording for data or preprints
7/24091 . . . Combinations of pits and tracks with specific interrelation
7/24094 . . . Indication parts or information parts for identification
7/24097 . . . Structures for detection, control, recording operation or replay operation; Special shapes or structures for centering or eccentricity prevention (within laminated discs G11B 7/24021); Arrangements for testing, inspecting or evaluating; Containers, cartridges or cassettes

NOTE
When classifying in this group, classification is also made in group G11B 23/00 if the subject matter disclosed in the context of an optical record carrier is of more general application
characterised by the selection of the material of recording layers comprising inorganic materials only, e.g. ablative layers {Metals or metalloids} {group 2 or 12 elements (e.g. Be, Ca, Mg, Zn, Cd)} {transition metal elements of groups 3-10} transition metal elements of group 11 (Cu, Ag, Au) {group 13 elements (B, Al, Ga, In)} {group 14 elements (e.g. Si, Ge, Sn)} {group 15 elements (e.g. Sb, Bi)} {group 16 elements (i.e. chalcogenides, Se, Te)} (Non-metallic elements) {Oxygen} {Nitrogen} {Sulfur} {Halides (F, Cl, Br...)}} {Carbon} Metals or elements of groups 13, 14, 15 or 16 of the Periodic System, e.g. B, Si, Ge, As, Sb, Bi, Se or Te Non-metallic elements comprising organic materials only {containing an azulene compound} containing a polymeric component containing dyes {Azo- dyes} {two or more dyes in one layer} {two or more dyes in two or more different layers, e.g. one dye absorbing at 405 nm in layer one and a different dye absorbing at 650 nm in layer two} {fluorescent dyes} azulene azo-dyes methine or polymethine dyes {Cyanine} {Mercyanine} {Oxonol} cyanine merocyanine oxonol porphines; azaporphines, e.g. phthalocyanines containing organometallic compounds (G11B 7/246 takes precedence) {neutral} {as anion} {as cation} neutral compounds as anions as cations containing liquid crystals comprising inorganic materials dispersed in an organic matrix}

NOTE
In group G11B 7/252, multi-aspect classification is applied, so that if subject matter is characterised by aspects covered by more than one of its subgroups, the subject matter should be classified in each of those subgroups.

of layers other than recording layers
of substrates {comprising glass} {comprising metals} {comprising resins} {Polycarbonate [PC]} {Polyester, e.g. PET, PETG, PEN} {Polystyrene [PS]} {Polycycloolefins [PCOs]} {Biodegradable polymers, cellulose included} comprising glass comprising metals comprising resins polycarbonates [PC] polyesters, e.g. PET, PETG or PEN polystyrene [PS] epoxy resins polycycloolefins [PCO] biodegradable polymers, e.g. cellulose of protective topcoat layers consisting essentially of organic resins comprising inorganic filler, e.g. particles, fibres consisting essentially of inorganic materials containing transition metal elements (Zn, Fe, Co, Ni, Pt) containing Group 13 elements (B, Al, Ga)) containing Group 14 elements (C, Si, Ge, Sn)) consisting essentially of organic resins containing inorganic fillers, e.g. particles or fibres consisting essentially of inorganic materials of layers improving adhesion between layers of layers having properties involved in recording or reproduction, e.g. optical interference layers or sensitising layers or dielectric layers, which are protecting the recording layers containing transition metal elements (Zn, Fe, Co, Ni, Pt) (containing Group 13 elements (B, Al, Ga)) (containing Group 14 elements (C, Si, Ge, Sn)) containing inorganic fillers, e.g. particles or fibres containing transition metal elements (Zn, Fe, Co, Ni, Pt) (containing Group 13 elements (B, Al, Ga)) containing group 14 elements except carbon (Si, Ge, Sn, Pb) containing carbon
Recording or reproducing using a method not covered by one of the main groups  

**G11B 300 - G11B 700; Record carriers therefor**  
(G11B 11/00 takes precedence (driving or moving of heads G11B 21/02))

9/02 . . using ferroelectric record carriers; Record carriers therefor

9/04 . . using record carriers having variable electric resistance; Record carriers therefor

9/06 . . using record carriers having variable electrical capacitance; Record carriers therefor (G11B 9/02 takes precedence)

9/061 . . {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B29, G03 {manufacture of intermediate mediums, e.g. matrices for processing G11B 23/0057})

9/066 . . {Electrically conductive layers (G11B 9/068 takes precedence)}

9/075 . . {using mechanical contact with record carrier, e.g. by stylus}

9/08 . . using electrostatic charge injection; Record carriers therefor

9/10 . . using electron beam; Record carriers therefor (G11B 9/08 takes precedence {see provisional also G11B 11/02})

9/12 . . using near-field interactions; Record carriers therefor

9/14 . . using microscopic probe means, i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy (STM) or Atomic Force Microscopy (AFM) for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (marking using electrical current B41M 5/20; measuring roughness or irregularity of surfaces G01B 7/34; details of scanning-probe microscopes G01Q)

9/1409 . . {Heads}

9/1418 . . {Disposition or mounting of heads or record carriers (G11B 17/00 and G11B 19/00 take precedence)}

9/1427 . . {with provision for moving the heads or record carriers relatively to each other or for access to indexed parts without effectively imparting a relative movement}

9/1436 . . {with provision for moving the heads or record carriers relatively to each other}

9/1445 . . {switching at least one head in operating function; Controlling the relative spacing to keep the head operative, e.g. for allowing a tunnel current flow}

9/1454 . . {Positioning the head or record carrier into or out of operative position or across information tracks; Alignment of the head relative to the surface of the record carrier (G11B 9/1443 takes precedence)}

9/1463 . . {Record carriers for recording or reproduction involving the use of microscopic probe means}

9/1472 . . {characterised by the form}

9/1481 . . {Auxiliary features, e.g. reference or indexing surfaces}

9/149 . . {characterised by the memorising material or structure}
11/00  Recording on or reproducing from the same record carrier wherein for these two operations the methods are covered by different main groups of groups G11B 3/00 - G11B 7/00 or by different subgroups of group G11B 9/00; Record carriers therefor (driving or moving of heads G11B 3/02, G11B 5/48, G11B 7/08, G11B 21/02)

NOTES
1. Groups G11B 11/00 - G11B 11/14 mainly cover:
   • combined systems or apparatus comprising both recording and reproducing using different methods;
   • record carriers therefor.
2. Reading only or recording only using mechanical, magnetic, optical or other methods is covered by groups G11B 3/00 - G11B 9/08

11/002  [using recording by perturbation of the physical or electrical structure]

11/005  [with reproducing by using non-optical beam of radiation or particles, e.g. electrons, directly interacting with the memorised information (G11B 11/007 takes precedence)]

11/007  [with reproducing by means directly associated with the tip of a microscopic electrical probe as defined in G11B 9/14 (details of heads G11B 9/1409; disposition or mounting of heads G11B 9/1418)]

11/03  using recording by deforming with non-mechanical means, e.g. laser, beam of particles

11/05  with reproducing by capacitive means (G11B 9/07 takes precedence)

11/06  with reproducing by mechanical sensing

11/08  using recording by electric charge or by variation of electric resistance or capacitance (G11B 11/002, G11B 11/10 take precedence)

11/10  using recording by magnetic means {or other means for magnetisation or demagnetisation of a record carrier, e.g. light induced spin magnetisation; Demagnetisation by thermal or stress means in the presence or not of an orienting magnetic field}

11/105  using a beam of light or a magnetic field for recording {by change of magnetisation and a beam of light for reproducing, (i.e. magneto-optical.), e.g. light-induced thermo-magnetic recording, {spin magnetisation recording,} Kerr (or Faraday) effect reproducing

11/1052  {characterised by the transducing operation to be executed}

11/1054  {Recording (for shaping of magnetic domains G11B 11/10528, for compensation of shift G11B 11/1053)}

11/1056  {by modulating only the light beam of the transducer}

11/1058  {by modulating only the magnetic field at the transducer}

11/1051  {by modulating both the magnetic field and the light beam at the transducers}

11/10513  {one of the light beam or the magnetic field being modulated by data and the other by a clock or frequency generator}

11/10515  {Reproducing (compensating pit shift G11B 11/1053)
NOTE

15/00 Driving, starting or stopping record carriers of filamentary or web form; Driving both such record carriers and heads; Guiding such record carriers or containers therefor; Control thereof; Control of operating function (driving or guiding heads G11B 3/00 - G11B 7/00; G11B 21/00)

15/005 . {Programmed access in sequence to indexed parts of tracks of operating tapes, by driving or guiding the tape (access by driving of both record carrier and head G11B 15/1816; see prov. also G11B 15/602)}

15/02 . Control of operating function, e.g. switching from recording to reproducing

15/023 . {remotely controlled}

15/026 . {by using processor, e.g. microcomputer}

NOTE

see provisional also G11B 15/005

15/03 . by using counters

NOTE

see prov. also G11B 15/00, G11B 27/00

15/04 . Preventing, inhibiting, or warning against accidental erasing or double recording (G11B 15/05 takes precedence)

15/05 . by sensing features present on or derived from record carrier or container (G11B 15/16 takes precedence)

NOTE

see provisional also G11B 15/02

15/06 . . . by sensing auxiliary features on record carriers or containers, e.g. to stop machine near the end of a tape

15/07 . . . on containers

NOTE

see provisional also G11B 15/06

15/08 . . . . by photoelectric sensing (G11B 15/07 takes precedence)

15/087 . . . by sensing recorded signals

NOTE

see provisional also G11B 15/06, G11B 15/02, G11B 27/00

15/093 . . . by sensing driving condition of record carrier, e.g. travel, tape tension

NOTE

see provisional also G11B 15/16, G11B 15/22, G11B 15/46

15/10 . . . Manually-operated control; Solenoid-operated control [(G11B 15/44 takes precedence)]

15/103 . . . {electrically operated}

15/106 . . . {mechanically operated}

15/12 . Masking of heads; {circuits for} Selecting or switching of heads between operative and inoperative functions {or between different operative functions or for selection between operative heads}; Masking of beams, e.g. of light beams [(track selection by moving the magnetic head G11B 5/54)]
15/125 . . . [conditioned by the operating function of the apparatus]
15/14 . . . Masking or switching periodically, e.g. of rotating heads
15/16 . . . by sensing presence, absence or position of record carrier or container
15/17 . . . of container

**NOTE**

see prov. also G11B 15/16

15/18 . . . Driving; Starting; Stopping; Arrangements for control or regulation thereof (\{G11B 15/56 takes precedence; handling tapes or filamentary material in general B65H 23/00\})

15/1808 . . . {Driving of both record carrier and head (G11B 15/467 takes precedence; mounting of head G11B 5/52)}

15/1816 . . . {Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads (see provisional also G11B 15/005)}

15/1825 . . . {driving or moving the head in a direction which cuts across the direction of travel of the tape, e.g. for helicoidal scanning}

15/1833 . . . . . . . [with head driven in a plane, cyclically around an axis, e.g. on headwheel (construction of headwheel G11B 5/53, G11B 21/16; disposition of heads on headwheel G11B 5/531, G11B 21/02)]

15/1841 . . . . . . . [with provision for information tracking by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement, e.g. for skew or time base correction (in the direction which cuts across tracks, i.e. for track following G11B 3/38, G11B 5/588, G11B 7/085, G11B 21/08, G11B 21/10; by controlling headwheel rotation G11B 15/4733, by guiding the tape G11B 15/602)]

15/185 . . . . . . . {using signals recorded in tracks disposed in parallel with the scanning direction}

15/1858 . . . . . . . {using auxiliary signals, i.e. pilot signals}

15/1866 . . . . . . . {superimposed on the main signal track}

15/1875 . . . {adaptations for special effects or editing (signal processing or indexing therefor G11B 27/00)}

15/1883 . . . {for record carriers inside containers}

15/1891 . . . {the record carrier being endless}

15/20 . . . Moving record carrier backwards or forwards by finite amounts, i.e. backspacing, forward spacing

15/22 . . . Stopping means (slowing-down preparatory to stopping or speed-changing G11B 15/48; speed-controlling by mechanical linkage G11B 15/50; brake constructions in general F16D (G11B 15/06 takes precedence; inside container G11B 23/04)]

15/24 . . . Drive disengaging means

15/26 . . . Driving record carriers by members acting directly or indirectly thereon {\{G11B 15/44 takes precedence; driving features inside container, see G11B 23/04 and subgroups\}}

15/28 . . . . . . . through rollers driving by frictional contact with the record carrier, e.g. capstan; Multiple arrangements of capstans or drums coupled to means for controlling the speed of the drive; Multiple capstan systems alternately engageable with record carrier to provide reversal

15/285 . . . . . . . {through pneumatic means}

15/29 . . . . . . . through pinch-rollers \{or tape rolls\} (G11B 15/295 takes precedence)

15/295 . . . . . . . with single capstan or drum simultaneously driving the record carrier at two separate points of an isolated part thereof, e.g. the capstan acting directly on the tape rollers

15/30 . . . . . . . through the means for supporting the record carrier, e.g. mandrel, turntable

15/32 . . . . . . . through the reels or cores on to which the record carrier is wound

15/34 . . . . . . . through non-skip drive means, e.g. sprocket

15/38 . . . Driving record carriers by pneumatic means \{(pneumatic control for capstans driving the record carrier by frictional contact G11B 15/285)\}

15/385 . . . . . . . \{directly, e.g. by rotating drum (guiding record carrier on rotating drum G11B 15/601)\}

15/40 . . . Driving record carriers otherwise than by electric motor

15/42 . . . manually

15/43 . . . Control or regulation of mechanical tension of record carrier, e.g. tape tension (controlling tension in filamentary material in general B65H 59/00 (by speed regulation G11B 15/46; by using reserve loops G11B 15/56))

15/44 . . . Speed-changing arrangements; Reversing arrangements; Drive transfer means therefor

15/442 . . . \{Control thereof\}

15/444 . . . \{reversing arrangements G11B 15/442 takes precedence\}

15/446 . . . . . . . \{by driving the reels only\}

15/448 . . . . . . . \{automatic reverse drive transfer therefor\}

15/46 . . . Controlling, regulating, or indicating speed \{(dependent on position of tape in reserve, loop G11B 15/56, G11B 15/58)\}

15/463 . . . . . . . \{by using pilot tracking tones embedded in binary coded signals, e.g. using DSV/CDS values of coded signals\}

15/467 . . . in arrangements for recording or reproducing wherein both record carriers and heads are driven \{(see provisional also G11B 15/1808)\}

15/4671 . . . . . . . \{by controlling simultaneously the speed of the tape and the speed of the rotating head\}

15/4672 . . . . . . . \{with provision for information tracking\}

15/4673 . . . . . . . \{by controlling the speed of the tape while the head is rotating\}

15/4675 . . . . . . . \{with provision for information tracking\}

15/4676 . . . . . . . \{using signals recorded in tracks disposed in parallel with the scanning direction\}

15/4677 . . . . . . . \{using auxiliary signals, i.e. pilot signals\}

15/4678 . . . . . . . \{superimposed on the main signal track\}
NOTE

see prov. also G11B 5/588

15/473 . . . by controlling the speed of the heads

15/4731 . . . (control of headwheel rotation (disposition or construction of headwheel motor G11B 5/53, G11B 21/02))

15/4733 . . . . . . . [with provision for information tracking, e.g. for time base correction]

15/4735 . . . . . . . [using signals recorded in tracks disposed parallel with the scanning direction]

15/4736 . . . . . . . . . [using auxiliary signals, i.e. pilot signals]

15/4738 . . . . . . . . . . . [superimposed on the main signal track]

15/48 . . . Starting; Accelerating; Decelerating; Starting; Accelerating; Decelerating

Arrangements preventing malfunction during drive change

15/50 . . . by mechanical linkage, e.g. clutch

15/52 . . . by using signals recorded on, or derived from, record carrier

15/54 . . . . . . . by stroboscope; by tachometer (speedometers or tachometers G01P)

15/56 . . . the record carrier having reserve loop, e.g. to minimise inertia during acceleration (measuring or control in connection therewith)

15/58 . . . with vacuum column

15/60 . . . Guiding record carrier (guiding devices structurally associated with magazines or cassettes G11B 23/04)

15/602 . . . . . . . [for track selection, acquisition or following]

15/605 . . . . . . . [without displacing the guiding means]

15/607 . . . . . . . [Pneumatic guiding]

15/61 . . . . . . . . . on drum, e.g. drum containing rotating heads (G11B 15/66 takes precedence)

15/615 . . . . . . . . . . . . . . . (inside container)

15/62 . . . . . . . . . . . . . . . Maintaining desired spacing between record carrier and head

15/64 . . . . . . . . . . . . . . . by fluid-dynamic spacing

15/66 . . . . . . . . . . . . . . . Threading; Loading; Automatic self-loading

15/662 . . . . . . . . . . . . . . . Positioning or locking of spool or reel]

15/665 . . . . . . . . . . . . . . . by extracting loop of record carrier from container

15/6651 . . . . . . . . . . . . . . . . [to pull the record carrier against non rotating heads]

15/6653 . . . . . . . . . . . . . . . . [to pull the record carrier against drum]

15/6655 . . . . . . . . . . . . . . . . . [using one loading ring, i.e. "C-type" (G11B 15/6658 takes precedence)]

15/6656 . . . . . . . . . . . . . . . . . [using two-sided extraction, i.e. "M-type"]

15/6658 . . . . . . . . . . . . . . . . . [with two loading rings rotating in opposite directions]

15/67 . . . . . . . . . . . . . . . . . . by extracting end of record carrier from container or spool

15/671 . . . . . . . . . . . . . . . . . . [using pneumatic means]

15/672 . . . . . . . . . . . . . . . . . . [Extracting end of record carrier from container or single reel (G11B 15/671 takes precedence)]

15/673 . . . . . . . . . . . . . . . . . . [Threading end of record carrier externally to single reel (G11B 15/671 takes precedence)]

15/674 . . . . . . . . . . . . . . . . . . [Threading or attaching end of record carrier on or to single reel (G11B 15/671 takes precedence)]

15/675 . . . Guiding containers [. . . e.g. loading, ejecting cassettes]

15/67502 . . . . . . . [Details]

15/67505 . . . . . . . [Servo control]

15/67507 . . . . . . . [Ejection damping means]

15/6751 . . . . . . . . . . . . . . . . . . [movement of the cassette parallel to its main side, i.e. front loading (G11B 15/67544 takes precedence)]

15/67513 . . . . . . . . . . . . . . . . . . [and movement of driving elements perpendicular thereto]

15/67515 . . . . . . . . . . . . . . . . . . [with servo control]

15/67518 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67521 . . . . . . . . . . . . . . . . . . [of cassette with internal belt drive]

15/67523 . . . . . . . . . . . . . . . . . . [with servo control]

15/67526 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67528 . . . . . . . . . . . . . . . . . . [of endless tape cassette]

15/67531 . . . . . . . . . . . . . . . . . . [with servo control]

15/67534 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67536 . . . . . . . . . . . . . . . . . . [of cassette inside drawer]

15/67539 . . . . . . . . . . . . . . . . . . [with servo control]

15/67542 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67544 . . . . . . . . . . . . . . . . . . [with movement of the cassette parallel to its main side and subsequent movement perpendicular thereto, i.e. front loading]

15/67547 . . . . . . . . . . . . . . . . . . [the two movements being made by the cassette holder]

15/67549 . . . . . . . . . . . . . . . . . . [with servo control]

15/67552 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67555 . . . . . . . . . . . . . . . . . . [the second movement only being made by the cassette holder]

15/67557 . . . . . . . . . . . . . . . . . . [with servo control]

15/6756 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67563 . . . . . . . . . . . . . . . . . . [with movement of the cassette perpendicular to its main side, i.e. top loading]

15/67565 . . . . . . . . . . . . . . . . . . [of the cassette with holder]

15/67568 . . . . . . . . . . . . . . . . . . [with servo control]

15/67568 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67573 . . . . . . . . . . . . . . . . . . [of the cassette without holder]

15/67576 . . . . . . . . . . . . . . . . . . [with servo control]

15/67578 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67581 . . . . . . . . . . . . . . . . . . [with pivoting movement of the cassette holder]

15/67584 . . . . . . . . . . . . . . . . . . [outside the apparatus]

15/67586 . . . . . . . . . . . . . . . . . . [with servo control]

15/67589 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/67592 . . . . . . . . . . . . . . . . . . [inside the apparatus]

15/67594 . . . . . . . . . . . . . . . . . . [with servo control]

15/67597 . . . . . . . . . . . . . . . . . . [with ejection damping means]

15/68 . . . Automatic cassette changing arrangements; automatic tape changing arrangements

15/6805 . . . . . . . . . . . . . . . . . . [with linearly moving rectangular box shaped magazines]

15/681 . . . . . . . . . . . . . . . . . . [in vertical direction]

15/6815 . . . . . . . . . . . . . . . . . . [in horizontal direction]

15/682 . . . . . . . . . . . . . . . . . . [with fixed magazines having fixed cassette storage cells, e.g. in racks]

15/6825 . . . . . . . . . . . . . . . . . . [Details of magazines, e.g. removable, adapted for cassettes of different sizes]

15/683 . . . . . . . . . . . . . . . . . . [wherein the recorder or player is moved according to the location of a selected cassette (G11B 15/684 takes precedence)]

15/6835 . . . . . . . . . . . . . . . . . . [the cassettes being transferred to a fixed recorder or player using a moving carriage]
Guiding record carriers not specifically of filamentary or web form, or of supports therefor (guiding cards or sheets G06K 13/00)

17/00

17/0005 . [Programmed access to indexed parts of tracks of operating discs, by guiding the disc]
17/02 . Details
17/021 . Selecting or spacing of record carriers for introducing the heads
17/022 . Positioning or locking of single discs
17/025 . of discs which are stationary during transducing operation
17/0255 . [flexible discs]
17/028 . of discs rotating during transducing operation
17/0281 . [by an adapter enabling the centre-pin to receive carriers with large centre hole]
17/0282 . [by means provided on the turntable]
17/0283 . [Two or more turntables]
17/0284 . [by clamps]
17/0285 . [mounted on a bridge]
17/0286 . [mounted on a pivotal lever]
17/0287 . [by permanent connections, e.g. screws, rivets]
17/0288 . [by means for moving the turntable or the clamber towards the disk]
17/03 . in containers or trays [(G11B 17/032, G11B 17/035 take precedence)]
17/032 . Positioning by moving the door or the cover [(G11B 17/035 takes precedence)]
17/035 . Positioning by moving the loading station
17/038 . Centering or locking of a plurality of discs in a single cartridge
17/04 . Feeding or guiding single record carrier to or from transducer unit [(guiding during transducing operation G11B 17/34)]
17/0401 . [Details]
17/0402 . [Servo control]
17/0404 . [with parallel drive rollers]
17/0405 . [Closing mechanism, e.g. door]
17/0407 . [controlling the loading of the record carrier]
17/0408 . [of non-disc record carrier, e.g. card]
17/041 . specially adapted for discs contained within cartridges
17/043 . Direct insertion, i.e. without external loading means
17/0432 . [adapted for discs of different sizes]
17/0434 . [with mechanism for subsequent vertical movement of the disc (G11B 17/0438 takes precedence)]
17/0436 . [with opening mechanism of the cartridge shutter (G11B 17/0438 takes precedence)]
17/0438 . [with mechanism for subsequent vertical movement of the disc and opening mechanism of the cartridge shutter]
17/044 . Indirect insertion, i.e. with external loading means
17/046 . with pivoting loading means
17/0463 . [adapted for discs of different sizes]
17/0466 . [with opening mechanism of the cartridge shutter]
17/047 . with sliding loading means
17/0473 . [adapted for discs of different sizes]
17/0476 . [with opening mechanism of the cartridge shutter]
17/049 . Insertion of discs having to be extracted from the cartridge prior to recording or reproducing
17/05 . specially adapted for discs not contained within cartridges
17/051 . Direct insertion, i.e. without external loading means
17/0515 . [adapted for discs of different sizes]
17/053 . Indirect insertion, i.e. with external loading means
17/054 . with pivoting loading means
17/0545 . [adapted for discs of different sizes]
17/056 . with sliding loading means
17/0565 . [adapted for discs of different sizes]
17/057 . specially adapted for handling both discs contained within cartridges and discs not contained within cartridges
17/058 . from consecutive-access magazine of disc records
17/10 . with horizontal transfer to the turntable from a stack arranged with a vertical axis
17/12 . with axial transfer to the turntable from a stack with a vertical axis
17/14 . by mechanism in rotating centre post, e.g. permitting the playing of both sides of a record
17/16 . by mechanism in stationary centre post, e.g. with stepped post, using fingers on post
17/162 . [with means for detecting the diameter of the record]
17/165 . [with mechanical detecting means]
17/167 . [with optical detecting means]
17/18 . by mechanism operating on the edge of the disc record
17/20 . with transfer away from stack on turntable after playing
from random access magazine of disc records

[17/22] . . . [with movable magazine (G11B 17/24 - G11B 17/28 take precedence)]

[17/221] . . . [in a vertical direction]

[17/223] . . . [wherein the disks are transferred from a fixed magazine to a fixed playing unit using a moving carriage]

[17/225] . . . [the magazine consisting of a single rotatable tray carrying the disks]

[17/228] . . . [Control systems for magazines (G11B 17/225 takes precedence)]

[17/24] . . . the magazine having a toroidal or part-toroidal shape

NOTE

Group G11B 17/30 takes precedence over groups G11B 17/24 - G11B 17/28.

[17/26] . . . the magazine having a cylindrical shape with vertical axis

[17/28] . . . the magazine having a cylindrical shape with horizontal axis

[17/30] . . . wherein the playing unit is moved according to the location of the selected record

[17/32] . . . Maintaining desired spacing between record carrier and head, e.g. by fluid-dynamic spacing (damping of vibrations of record carriers on turntables by fluid-dynamic means G11B 19/2018)

[17/34] . . . Guiding record carriers during transducing operation, e.g. for track following (G11B 17/32 takes precedence)

19/00 Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function (guiding such record carriers G11B 17/000); [Driving both disc and head]

19/02 . . . Control of operating function, e.g. switching from recording to reproducing

19/022 . . . [Control panels]

19/025 . . . [‘Virtual’ control panels, e.g. Graphical User Interface [GUI]]

19/027 . . . [Remotely controlled (remote control systems in general G08C)]

19/04 . . . Arrangements for preventing, inhibiting, or warning against double recording on the same blank or against other recording or reproducing malfunctions

19/041 . . . [Detection or prevention of read or write errors]

19/042 . . . [due to external shock or vibration]

19/043 . . . [by detecting a free-fall condition]

19/044 . . . [by using a data buffer]

19/045 . . . [by detecting mistracking]

19/046 . . . [Detection or prevention or problems due to temperature]

19/047 . . . [Recovery from power failure]

19/048 . . . [Testing of disk drives, e.g. to detect defects or prevent sudden failure]

19/06 . . . by counting or timing of machine operations

19/08 . . . by using devices external to the driving mechanisms, e.g. coin-freed switch (coin actuated mechanisms [G07F 5/00])

19/10 . . . by sensing presence or absence of record in accessible stored position or on turntable

19/12 . . . by sensing distinguishing features of [or on] records, e.g. diameter [end mark]

2019/121 . . . [by photo-electric sensing]

19/122 . . . [involving the detection of an identification or authentication mark (record carriers indicating unauthorised or prior use G11B 23/28)]

19/124 . . . [involving the detection of diameter of disks (feeding or guiding of a single record carrier G11B 17/04 and subgroups)]

19/125 . . . [involving the detection of carrier data format]

19/127 . . . [involving detection of the number of sides, e.g. single or double, or layers, e.g. for multiple recording or reproducing layers]

19/128 . . . [involving the detection of track pitch or recording density]

19/14 . . . by sensing movement or position of head, e.g. means moving in correspondence with head movements

19/16 . . . Manual control

19/165 . . . [by closing the cover]

19/18 . . . Manual action on one element producing control effect indirectly by consequent action of driving mechanism

19/20 . . . Driving; Starting; Stopping; Control thereof

19/2009 . . . [Turntables, hubs and motors for disk drives; Mounting of motors in the drive (means for clamping of disk to turntable G11B 17/022 and subgroups)]

19/2018 . . . [Incorporating means for passive damping of vibration, either in the turntable, motor or mounting]

19/2027 . . . [Turntables or rotors incorporating balancing means; Means for detecting imbalance]

19/2036 . . . [Motors characterized by fluid-dynamic bearings]

19/2045 . . . [Hubs]

19/2054 . . . [Spindle motor power-up sequences]

19/2063 . . . [Spindle motor power-down sequences]

19/2072 . . . [for the reduction of power consumption during idle time]

19/2081 . . . [emergency power-down]

19/209 . . . [in multiple disk arrays, e.g. spindle synchronisation in RAID systems]

19/22 . . . Brakes other than speed-regulating brakes (brake constructions in general F16D)

19/24 . . . Arrangements for providing constant relative speed between record carrier and head

19/247 . . . [using electrical means]

19/253 . . . [using mechanical means]

19/26 . . . Speed-changing arrangements; Reversing arrangements; Drive-transfer means therefor

19/265 . . . [Friction wheel drive]

19/27 . . . Belt drive

19/275 . . . Gear wheel drive

19/28 . . . Speed controlling, regulating, or indicating (G11B 19/24 takes precedence; speedometers or tachometers [G11P])

20/00 Signal processing not specific to the method of recording or reproducing; Circuits therefor
[Time or data compression or expansion (audio compression based on psychoacoustics G10L 19/00; data processing for reproducing audio data at different playback speeds G11L 21/04; video compression H04N 19/00; data compression per se H03M 7/30)]

20/00014 . . . [the compressed signal being an audio signal]
20/00021 . . . [lossless audio compression]
20/00028 . . . [Advanced audio coding [AAC]]
20/00036 . . . [AC-3, i.e. ATSC digital audio compression standard]
20/00043 . . . [Adaptive transform acoustic coding [ATRAC]]
20/0005 . . . [DTS audio codecs]
20/00057 . . . [MPEG-1 or MPEG-2 audio layer III [MP3]]
20/00065 . . . [Sigma-delta audio encoding]
20/00072 . . . [the compressed signal including a video signal]
20/00079 . . . [the compression ratio or quality level being adapted to circumstances, e.g. to the available recording space]
20/00086 . . . [Circuits for prevention of unauthorised reproduction or copying, e.g. piracy (indicating unauthorised use of record carriers in general G11B 23/28; scrambling for television signal recording H04N 5/913; network architectures or network protocols for network security H04L 63/00; cryptographic mechanisms or cryptographic arrangements for secret or secure communication H04L 9/00)]
20/00094 . . . [involving measures which result in a restriction to authorised record carriers]
20/00101 . . . [the original record carrier having a larger recording capacity than the potential target medium]
20/00108 . . . [wherein original, non-rewritable record carriers are recognised by trying to erase recorded data]
20/00115 . . . [wherein the record carrier stores a unique medium identifier]
20/00123 . . . [the record carrier being identified by recognising some of its unique characteristics, e.g. a unique defect pattern serving as a physical signature of the record carrier]
20/0013 . . . [wherein the measure concerns not the entire record carrier, but a specific physical or logical area of one or more record carriers]
20/00137 . . . [involving measures which result in a restriction to contents recorded on or reproduced from a record carrier to authorised users]
20/00144 . . . [involving a user identifier, e.g. a unique customer ID]
20/00152 . . . [involving a password]
20/00159 . . . [Parental control systems]
20/00166 . . . [involving measures which result in a restriction to authorised contents recorded on or reproduced from a record carrier, e.g. music or software]
20/00173 . . . [wherein the origin of the content is checked, e.g. determining whether the content has originally been retrieved from a legal disc copy or another trusted source]
20/00181 . . . [using a content identifier, e.g. an international standard recording code [ISRC] or a digital object identifier [DOI]]
the recording medium { involving measures which change the format of
from the record carrier }

is encrypted and recorded on and/or reproduced { characterised by a specific kind of data which
copied from/to a record carrier }

encrypted with a different key when being { wherein contents are decrypted and re-
encrypted, e.g. sector headers, TOC or the separate record carrier }

{ wherein parity data is encrypted }

{ wherein each title is encrypted with a separate encryption key }

{ wherein encrypted content data is subjected to a further, iterated encryption, e.g. interwoven encryption }

{ wherein external data is encrypted, e.g. for secure communication with an external device or for encrypting content on a separate record carrier }

{ wherein license data is encrypted }

{ wherein further management data is encrypted, e.g. sector headers, TOC or the lead-in or lead-out areas }

{ wherein parity data is encrypted }

{ involving measures which change the format of the recording medium }

{ said format change concerning the data encoding, e.g., modulation schemes violating run-length constraints, causing excessive DC content, or involving uncommon codewords or sync patterns }

{ wherein the shape of recording marks is altered, e.g. the depth, width, or length of pits }

{ wherein properties of tracks are altered, e.g., by changing the wobble pattern or the track pitch, or by adding interruptions or eccentricity }

{ wherein the material that the record carrier is made of is altered, e.g. adding reactive dyes that alter the optical properties of a disc after prolonged exposure to light or air }

{ wherein the modification to the logical format directly concerns user data }

{ wherein the modification to the logical format mainly concerns management data, e.g., by changing the format of the TOC or the subcode }

{ said management data being address data }

{ the address data format being such that there are overlapping address ranges }

{ the address data being scrambled so that ascending address values do not reflect the physical order of data blocks }

{ involving a control step which is implemented as an executable file stored on the record carrier }

{ involving a step of erasing or nullifying data, e.g. data being overwritten with a random string }

{ wherein the erased or nullified data include a cryptographic key }

{ involving measures which prevent a specific kind of data access }

{ said measures preventing that data are read from the recording medium }

{ said measures preventing that data are recorded on the recording medium }

{ involving a purchase action }

{ wherein accounting and payment are postponed, e.g. until the player can establish a network connection to the service provider }

{ wherein a prepaid credit balance is registered on the recording medium }

{ involving a digital rights management system for enforcing a usage restriction }

{ wherein the usage restriction is associated with a specific geographical region }

{ wherein the usage restriction can be expressed as a specific number }

{ wherein the usage restriction limits the number of copies that can be made, e.g. CGMS, SCMS, or CCI flags }
{ involving measures which are linked to media
nevertheless be recognised by an algorithm }
{ involving a watermark, i.e. a barely perceptible
or additional semiconductor circuitry }
attached to the medium, e.g. holograms, sensors,
{ remote server }
{ exchanging information with
purpose, e.g. intended scratches }
{ based on a hash function }
{ wherein the record carrier stores a trial version of a content }
{ the trial version being of lower quality than the
original version }
{ Circuits for stereophonic or quadraphonic
recording or reproducing }
{ analogue recording or reproducing }
{ (error detection or correction) }
{ Direct recording or reproducing }
{ Angle-modulation recording (angle modulation
H05C; demodulation of angle modulated
oscillations H03D) }
{ Pulse-modulation recording or reproducing
(pulse-code-modulation recording G11B 20/10;
pulse modulation or pulse demodulation H03K) }
{ Digital recording or reproducing (digital computers
in which at least part of the computation is effected
electrically, arrangements for handling digital data
G06F: transmission of digital information H04L) }
{ Improvement or modification of read or write
signals }
{ (analog processing for digital
recording or reproduction
(G11B 20/10037 - G11B 20/10481 take
precedence) }
{ adjusting the signal strength during
recording or reproduction, e.g. variable
gain amplifiers (optimum power control for
optical discs G11B 7/125) }
{ (A/D conversion, D/A conversion, sampling,
slicing and digital quantisation or adjusting
parameters thereof) }
{ filtering or equalising, e.g. setting the tap
weights of an FIR filter }
{ using partial response filtering when
writing the signal to the medium or reading it
therefrom) }
{ (EEPROM or E2PROM, i.e. extended
partial response class 4, polynomial (1-
D)*(1+D)^3) }
{ (EPR4, i.e. extended partial response class
4, polynomial (1-D)*(1+D)^2) }
{ (PR1 or PR(1,1), i.e. partial response
class 1, polynomial 1+D) }
{ (partial response PR(1,1,1,1)) }
{ (partial response PR(1,2,2,1), i.e. partial response
class 2, polynomial (1+D)(2+4D+D^2) }
{ (partial response PR(1.2,2.2,1)) }
{ (partial response PR(1.2,2.2,2,1)) }
{ (partial response PR(1.2,3,3.2,1)) }
{bit detection or demodulation methods}

{baseline correction (DC correction by choosing codewords of the modulation code G11B 20/1426)}

{compensation for data shift (e.g. pulse crowding effects)}

{clock-related aspects, e.g. phase or frequency adjustment or bit synchronisation (dedicated sync patterns in the modulation code G11B 20/1403)}

{wherein an asynchronous, free-running clock is used; Interpolation of sampled signals}

{wherein a phase-locked loop [PLL] is used}

{the PLL being discrete time or digital PLL}

{simultaneous timing recovery for multiple parallel tracks}

{bit detection or demodulation methods}

{the demodulation process being specifically adapted to partial response channels, e.g. PRML decoding}

{using probabilistic methods, e.g. maximum likelihood detectors (G11B 20/10277 takes precedence)}

{using the Viterbi algorithm}

{signal quality assessment}

{amplitude of the recorded or reproduced signal}

{asymmetry of the recorded or reproduced waveform}

{wherein the asymmetry is linked to domain bloom}

{sub-information or auxiliary signals different from the normal recording marks, e.g. signals reproduced from wobble tracks}

{baseline shift, DC content, bias}

{digital demodulation process}

{based on hard decisions, e.g. by evaluating bit error rates before or after ECC decoding}

{based on soft decisions, e.g. confidence values, probability estimates, likelihoods values or path metrics of a statistical decoding algorithm}

{control of the read or write heads, e.g. tracking errors, defocus or tilt compensation}

{jitter, timing deviations or phase and frequency errors}

{by verifying the timing of signal transitions, e.g. rising or falling edges, or by analysing signal slopes}

{by verifying the timing of peak values}

{by counting out-of-lock events of a PLL}

{by verifying the timing of predetermined signal patterns, e.g. sync patterns}

{by verifying the timing of zero crossings}

{physical shape of recording marks, e.g. their length, width, depth or contour}

{consistency with a reference waveform in a given time period, e.g. by calculating correlations or mean square errors}

{derived from statistics of other quality measures, e.g. their mean, variance or skew}

{optimisation methods}

{using closed-form solutions}

{selecting parameter values from a plurality of predetermined settings}

{iterative methods, e.g. trial-and-error, interval search, gradient descent or feedback loops (G11B 20/10518 takes precedence)}

{using neural networks}

{Audio or video recording; Data buffering arrangements (G11B 20/12 - G11B 20/18 take precedence)}

{specifically adapted for audio data}

{wherein the frequency, the amplitude, or other characteristics of the audio signal is taken into account}

{frequency}

{volume or amplitude}

{parameters controlling audio interpolation processes}

{specifically adapted for recording or reproducing multichannel signals}

{surround sound signal}

{3D video data}

{Data buffering arrangements, e.g. recording or playback buffers}

{the buffer having a specific structure}

{First-in-first-out memories [FIFO] buffers}

{First-in-last-out memories [LIFO] buffers}

{Cache memories for random data access, e.g. buffers wherein the data output is controlled by a priority parameter other than retention time}

{Ring buffers, e.g. buffers wherein an iteratively progressing read or write pointer moves back to the beginning of the buffer when reaching the last storage cell}

{aspects of buffer control}

{input interface, i.e. the way data enter the buffer, e.g. by informing the sender that the buffer is busy}

{output interface, i.e. the way data leave the buffer, e.g. by adjusting the clock rate}

{processing rate of the buffer, e.g. by accelerating the data output}

{buffer capacity, e.g. when the buffer capacity is exhausted, buffered data are overwritten with more recent data, accepting that the old data are lost}
interface between computers and data recorders

working in a specific kind of data

content data

by pre-caching the initial portion of songs or other recorded or downloaded data for starting playback instantly

instructions or commands

parameters, e.g. for decoding or encoding

address data

involving specific measures to prevent a buffer overflow

involving specific measures to prevent a buffer underrun

the buffer being used to prevent vibrations or shocks from causing delays

Copying or moving data from one record carrier to another

wherein not all recorded data are copied or moved

Erasing data on the record carrier

Finalising a record carrier after a recording operation, e.g. to ensure compatibility with a ROM medium

wherein a selection is made among at least two alternative ways of processing

the kind of record carrier being the selection criterion

the kind of data being the selection criterion

Overwriting or replacing recorded data

using pseudo-overwriting, i.e. virtually or logically overwriting data on WORM media by remapping recorded blocks to alternate areas

Seeking data on the record carrier for preparing an access to a specific address

involving an inter-layer jump, i.e. changing from one recording layer to another

wherein a time constraint must be met

Real-time recording or reproducing, e.g. for ensuring seamless playback of AV data

Concurrent recording or playback of different streams or files

wherein both recording and playback take place simultaneously

Management of interruptions, e.g. due to editing

Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable

wherein a disc is spun at a variable speed

Formatting, e.g. arrangement of data block or words on the record carriers

within interface between computers and data recorders

G11B 7/0033

Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable

wherein the size of the buffer is variable, e.g. by adding additional memory cells for coping with input streams that have high bit rates

wherein the buffer I/O can be temporarily suspended, e.g. by refusing to accept further data to be buffered

including a specific threshold value

the usage of the buffer being restricted to a specific kind of data

Content data

by pre-caching the initial portion of songs or other recorded or downloaded data for starting playback instantly

Instructions or commands

Parameters, e.g. for decoding or encoding

Address data

Involving specific measures to prevent a buffer overflow

Involving specific measures to prevent a buffer underrun

The buffer being used to prevent vibrations or shocks from causing delays

Copying or moving data from one record carrier to another

Wherein not all recorded data are copied or moved

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Wherein both recording and playback take place simultaneously

Management of interruptions, e.g. due to editing

Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable

Wherein a disc is spun at a variable speed

Formatting, e.g. arrangement of data block or words on the record carriers

Within interface between computers and data recorders

G11B 306F

Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable

wherein the size of the buffer is variable, e.g. by adding additional memory cells for coping with input streams that have high bit rates

wherein the buffer I/O can be temporarily suspended, e.g. by refusing to accept further data to be buffered

including a specific threshold value

the usage of the buffer being restricted to a specific kind of data

Content data

by pre-caching the initial portion of songs or other recorded or downloaded data for starting playback instantly

Instructions or commands

Parameters, e.g. for decoding or encoding

Address data

Involving specific measures to prevent a buffer overflow

Involving specific measures to prevent a buffer underrun

The buffer being used to prevent vibrations or shocks from causing delays

Copying or moving data from one record carrier to another

Wherein not all recorded data are copied or moved

Erasing data on the record carrier

Finalising a record carrier after a recording operation, e.g. to ensure compatibility with a ROM medium

Wherein a selection is made among at least two alternative ways of processing

The kind of record carrier being the selection criterion

The kind of data being the selection criterion

Overwriting or replacing recorded data

Using pseudo-overwriting, i.e. virtually or logically overwriting data on WORM media by remapping recorded blocks to alternate areas

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Real-time recording or reproducing, e.g. for ensuring seamless playback of AV data

Concurrent recording or playback of different streams or files

Wherein both recording and playback take place simultaneously

Management of interruptions, e.g. due to editing

Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable

Wherein a disc is spun at a variable speed

Formatting, e.g. arrangement of data block or words on the record carriers

Within interface between computers and data recorders
(the area forming one or more zones, herein each zone is shaped like an annulus or a circular sector)

{CAV zone, in which a constant angular velocity is used}

{CLV zone, in which a constant linear velocity is used}

{rewritable, e.g. a RAM zone of a hybrid disc having ROM and RAM areas}

{ROM zone, i.e. an unrewritable zone}

{wherein the bits are arranged on a two-dimensional hexagonal lattice}

{for continuous data, e.g. digitised analog information signals, pulse code modulated [PCM] data}

{for discontinuous data, e.g. digital information signals, computer programme data}

{for mixed data, i.e. continuous and discontinuous data}

{Fixed Block Architecture [FBA] format}

{Count Key Data [CKD] format}

{where blocks are arranged within multiple radial zones, e.g. Zone Bit Recording or Constant Density Recording discs, MCAV discs, MCLV discs}

{with ROM/RAM areas}

{on films, e.g. for optical moving-picture soundtracks (optical aspect G11B 7/0032)}

{with more than one format/standard, e.g. conversion from CD-audio format to R-DAT format}

{wherein the formatting concerns a specific kind of data}

{Control data, system data or management information, i.e. data used to access or process user data}

{Address data}

{Address in pregroove [ADIP] information}

{Absolute time in pregroove [ATIP] information}

{the address data being stored in a subcode, e.g. in the Q channel of a CD}

{Burst indicator subcode [BIS]}

{stored in pre-pits, i.e. in embossed pits, ROM marks or prepits}

{Calibration data, e.g. specific training patterns for adjusting equalizer settings or other recording or playback parameters}

{for managing gaps between two recordings, e.g. control data in linking areas, run-in or run-out fields, guard or buffer zones}

{Physical format specifications of the record carrier, e.g. compliance with a specific standard, recording density, number of layers, start of data zone or lead-out}

{Permanent information and control data stored in the PIC zone of a Blu-Ray disc}

{Servo information}

{in embedded servo fields}

{in servo fields which split data fields}

{Status of the record carrier, e.g. space bit maps, flags indicating a formatting status or a write permission}

{Synchronisation pattern, e.g. VCO fields (specific bit sequences of sync patterns G11B 20/1403; A/V synchronisation G11B 27/00)}

{Formatting by padding empty spaces with dummy data, e.g. writing zeroes or random data when de-icing optical discs}

{Formatting of user data}

{wherein the formatting serves a specific purpose}

{Enhancement of the total storage capacity}

{Increase of the access speed}

{wherein the focus is on the read access speed}

{wherein the focus is on the write access speed}

{Enhancement of the signal quality}

{using self-clocking codes}

{characterised by the use of two levels}

{code representation depending on a single bit, i.e. where a one is always represented by a first code symbol while a zero is always represented by a second code symbol}

{conversion to or from pulse width coding}

{conversion to or from pulse frequency coding}

{to or from biphase level coding, i.e. to or from codes where a one is coded as a transition from a high to a low level during the middle of a bit cell and a zero is encoded as a transition from a low to a high level during the middle of a bit cell or vice versa, e.g. split phase code, Manchester code conversion to or from biphase space or mark coding, i.e. to or from codes where there is a transition at the beginning of every bit cell and a one has no second transition and a zero has a second transition one half of a bit period later or vice versa, e.g. double frequency code, FM code}

{Code representation depending on subsequent bits, e.g. delay modulation, double density code, Miller code}

{conversion to or from block codes or representations thereof}

{4 to 6 modulation}

{8 to 9 modulation}

{8 to 10 modulation}

{8 to 12 modulation}

{16 to 17 modulation}

{24 to 25 modulation}

{17PP modulation, i.e. the parity preserving RLL(1,7) code with rate 2/3 used on Blu-Ray discs}

{wherein DC control is performed by calculating a digital sum value [DSV]}
drop-outs } 

tracks 

track or in a combination of several information signals are either recorded in a separate clocking using non self-clocking codes, i.e. the clock precedence ) 

\{ by interleaving \} \{ by redundancy in data representation \} \{ Pulse code modulation systems for audio \} \{ by adding special lists or symbols to the coded information \} \{ using error detecting or error correcting codes \} \{ Codewords used in servo patterns \} \{ characterised by the use of three levels \} \{ two levels are symmetric, in respect of the sign to the third level which is “zero” \} \{ characterised by the use of more than three levels \} \{ using non self-clocking codes, i.e. the clock signals are either recorded in a separate clocking track or in a combination of several information tracks \} \{ Error detection or correction; Testing \} \{ by redundacy in data representation \} \{ Pulse code modulation systems for audio signals \} \{ by interleaving \} \{ by adding special bits or symbols to the coded information \} \{ Testing \} \{ using test patterns \} \{ wherein a flag is set when errors are detected or qualified \} \{ wherein a defect list or error map is generated \} \{ wherein at least one additional attempt is made to read or write the data when a first attempt is unsuccessful \} \{ by adding special lists or symbols to the coded information \} \{ using a Reed Solomon [RS] code \} \{ using a cross-interleaved Reed Solomon [CIRC] \} \{ using a cyclic redundancy check [CRC] \} \{ using a pcket code, i.e. a code in which a long distance code [LDC] is arranged as an array and columns containing burst indicator subcode [BIS] are multiplexed for erasure decoding \} \{ using an low density parity check [LDPC] code \} \{ using a product code which has inner and outer parity symbols \} \{ using a turbo code \} \{ wherein a trellis is used for decoding the error correcting code \} \{ wherein the Viterbi algorithm is used for decoding the error correcting code \} \{ by interleaving \} \{ Preventing ageing phenomena from causing data loss, e.g. by monitoring the age of record carriers or by recognising wear, and by copying information elsewhere when a record carrier becomes unreliable \} \{ Temporary defect structures for write-once discs, e.g. TDDS, TDMA or TDFL \} \{ Interpolating methods \} \{ Direct read-after-write methods \} \{ Methods for assignment of alternate areas for defective areas \} \{ using linear replacement to relocate data from a defective block to a non-contiguous spare area, e.g. with a secondary defect list [SDL] \} \{ using skip or slip replacement to relocate data from a defective block to the next usable block, e.g. with a primary defect list [PDL] \} . for correction of skew for multitrack recording . for reducing distortions . for reducing wow or flutter \{ by controlling the speed of the record carrier G11B 15/46, G11B 19/28 \} . for reducing noise \{ control of amplification in general, e.g. dependent upon noise level H03G \} } 

\{ Access to indexed tracks or parts of operating record carriers \} } 

\{ Programmed access in sequence to indexed parts of operating record carriers \} } 

\{ Preventing ageing phenomena from causing data loss, e.g. by monitoring the age of record carriers or by recognising wear, and by copying information elsewhere when a record carrier becomes unreliable \} \{ Temporary defect structures for write-once discs, e.g. TDDS, TDMA or TDFL \} \{ Interpolating methods \} \{ Direct read-after-write methods \} \{ Methods for assignment of alternate areas for defective areas \} \{ using linear replacement to relocate data from a defective block to a non-contiguous spare area, e.g. with a secondary defect list [SDL] \} \{ using skip or slip replacement to relocate data from a defective block to the next usable block, e.g. with a primary defect list [PDL] \} . for correction of skew for multitrack recording . for reducing distortions . for reducing wow or flutter \{ by controlling the speed of the record carrier G11B 15/46, G11B 19/28 \} . for reducing noise \{ control of amplification in general, e.g. dependent upon noise level H03G \} } 

\{ Access to indexed tracks or parts of operating record carriers \} } 

\{ Programmed access in sequence to indexed parts of operating record carriers \} } 

\{ Preventing ageing phenomena from causing data loss, e.g. by monitoring the age of record carriers or by recognising wear, and by copying information elsewhere when a record carrier becomes unreliable \} \{ Temporary defect structures for write-once discs, e.g. TDDS, TDMA or TDFL \} \{ Interpolating methods \} \{ Direct read-after-write methods \} \{ Methods for assignment of alternate areas for defective areas \} \{ using linear replacement to relocate data from a defective block to a non-contiguous spare area, e.g. with a secondary defect list [SDL] \} \{ using skip or slip replacement to relocate data from a defective block to the next usable block, e.g. with a primary defect list [PDL] \} . for correction of skew for multitrack recording . for reducing distortions . for reducing wow or flutter \{ by controlling the speed of the record carrier G11B 15/46, G11B 19/28 \} . for reducing noise \{ control of amplification in general, e.g. dependent upon noise level H03G \} }
Record carriers not specific to the method of recording or reproducing; Accessories, e.g. containers, specially adapted for co-operation with the recording or reproducing apparatus (Intermediate mediums; Apparatus or processes specially adapted for their manufacture (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B29, B41M, B05D, C08L, F16N))

NOTE

In group G11B 23/00, recording or reproducing apparatus does not include the record carriers.

Containers for flat record carriers

<table>
<thead>
<tr>
<th>Class</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>23/0014</td>
<td>(record carriers not specifically of filamentary or web form (G11B 23/0057 takes precedence))</td>
</tr>
<tr>
<td>23/0021</td>
<td>[Discs]</td>
</tr>
<tr>
<td>23/0028</td>
<td>[Details]</td>
</tr>
<tr>
<td>23/0035</td>
<td>[Means incorporated in the disc, e.g. hub, to enable its guiding, loading or driving (means for driving the head G11B 21/06; guiding the disc for centering or locking G11B 17/02; turntables or spindles for driving G11B 19/09))</td>
</tr>
<tr>
<td>23/0042</td>
<td>[With provision for auxiliary features (sensing such features G11B 17/00, G11B 19/02))</td>
</tr>
<tr>
<td>23/005</td>
<td>[Flexible discs (G11B 23/0035 takes precedence)]</td>
</tr>
</tbody>
</table>

[Intermediate mediums, i.e. mediums provided with an information structure not specific to the method of reproducing or duplication such as matrices for mechanical pressing of an information structure (for record carriers with directly readable mechanical information G11B 3/685); record carriers having a relief information structure provided with or included in layers not specific for a single reproducing method; apparatus or processes specially adapted for their manufacture]
23/033 . . . for flexible discs
23/0332 . . . [for single discs, e.g. envelopes]
23/0335 . . . [for disc packs]
23/0337 . . . [comprising latching or movable handling devices (G11B 23/0325 and G11B 17/038 take precedence)]
23/037 . . . Single reels or spools
23/04 . . . Magazines; Cassettes [for webs or filaments] (G11B 23/12 takes precedence ; cassettes with sealing or locking means G11B 23/28; dummy cassettes for locking in the drive G11B 33/005)
23/041 . . . [Details]
23/042 . . . [Auxiliary features (sensing such features G11B 15/06)]
23/043 . . . [Brakes for tapes or tape reels]
23/044 . . . [Reels or cores; positioning of the reels in the cassette]
23/045 . . . [Covers]
23/046 . . . [Indicating means, e.g. quantity of tape]
23/047 . . . [Guiding means]
23/048 . . . [Driving features]
23/049 . . . [Cassettes for special applications not otherwise provided for]
23/06 . . . for housing endless webs or filaments
23/07 . . . using a single reel or core
23/08 . . . for housing webs or filaments having two distinct ends
23/087 . . . using two different reels or cores
23/08707 . . . [Details]
23/08714 . . . [Auxiliary features (sensing such features G11B 15/06)]
23/08721 . . . [Brakes for tapes or tape reels (G11B 23/08707 takes precedence)]
23/08728 . . . [Reels or cores; positioning of the reels in the cassette]
23/08735 . . . [Covers]
23/08742 . . . [in combination with brake means]
23/0875 . . . [Indicating means, e.g. quantity of tape]
23/08757 . . . [Guiding means]
23/08764 . . . [Liner sheets]
23/08771 . . . [Pressure pads]
23/08778 . . . [Driving features, e.g. belt]
23/08785 . . . [Envelopes]
23/08792 . . . [Shielding devices]
23/093 . . . the reels or cores being coaxial
23/107 . . . using one reel or core, one end of the record carrier coming out of the magazine or cassette
23/113 . . . Apparatus or processes specially adapted for the manufacture of magazines or cassettes [e.g. initial loading into container (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B21, B29, B65)]
23/12 . . . Bins for random storage of webs or filaments
23/14 . . . providing ability to repeat location, e.g. using sprocket holes
23/16 . . . Record carriers with single-track for recording at spaced intervals along the track thereof, e.g. for speech or language training [contains no documents]
25/00 Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing (individual parts of apparatus G11B 3/00 - G11B 23/00). [e.g. dictating apparatus; Combinations of such apparatus]

25/02 . using cylindrical record carriers
25/04 . using flat record carriers, e.g. disc, card
25/043 . [using rotating discs]
25/046 . [using stationary discs, or cards provided with a circular recording area (driving heads relatively to stationary record carriers for mechanical transducing G11B 3/40); automatic feed mechanism producing a transducing traverse of the head across stationary disk tracks G11B 21/043]
25/06 . using web-form record carriers, e.g. tape
25/063 . [using tape inside container]
25/066 . [adapted for use with containers of different sizes or configurations; adaptor devices therefor]
25/08 . using filamentary record carriers, e.g. wire
25/10 . Apparatus capable of using record carriers defined in more than one of the sub-groups G11B 25/02 - G11B 25/08; [Adaptor devices therefor]

27/00 Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel

27/002 . [Programmed access in sequence to a plurality of record carriers or indexed parts, e.g. tracks, thereof, e.g. for editing; (transfer of record carriers from magazine G11B 15/68; G11B 17/10; G11B 17/22)]
27/005 . [Reproducing at a different information rate from the information rate of recording (for television signals H04N 5/783)]
27/007 . [reproducing continuously a part of the information, i.e. repeating]
27/02 . Editing, e.g. varying the order of information signals recorded on, or reproduced from, record carriers (arrangements for sorting or merging computer data on continuous record carriers G06F 7/22; mixing of video signals H04N 5/265)
27/022 . Electronic editing of analogue information signals, e.g. audio or video signals
27/024 . . . on tapes (G11B 27/028; G11B 27/029 take precedence)
27/026 . . . on discs (G11B 27/028; G11B 27/029 take precedence)
27/028 . . . with computer assistance
27/029 . . Insert-editing
27/031 . Electronic editing of digitised analogue information signals, e.g. audio or video signals
27/032 . . . on tapes (G11B 27/036; G11B 27/038 take precedence)
27/034 . . . on discs (G11B 27/036; G11B 27/038 take precedence)
27/036 . . Insert-editing
27/038 . . Cross-faders thencefor
27/04 . . using differential drive of record carrier and head ((transferred to G11B 15/1825))
27/06 . Cutting and rejoining; Notching, or perforating record carriers otherwise than by recording styli (record carriers with provision for splicing G11B 23/20)

27/10 . Indexing; Addressing; Timing or synchronising; Measuring tape travel
27/102 . . . [Programmed access in sequence to addressed parts of tracks of operating record carriers (access by moving the head G11B 3/08, G11B 3/54, G11B 7/085, G11B 21/022; by moving the record carrier G11B 15/005, G11B 17/005, by driving of both record carrier and head G11B 15/1816)]
27/105 . . . [of operating discs]
27/107 . . . [of operating tapes]
27/11 . . by using information not detectable on the record carrier
27/13 . . the information being derived from movement of the record carrier, e.g. using tachometer
27/15 . . . using mechanical sensing means ([see provisionally also G11B 27/13])
27/17 . . . using electrical sensing means ([see provisionally also G11B 27/13])
27/19 . . by using information detectable on the record carrier
27/22 . . . Means responsive to presence or absence of recorded information signals
27/24 . . . by sensing features on the record carrier other than the transducing track (for controlling purposes G11B 15/00; G11B 17/00); [sensing signals or marks recorded by another method than the main recording]
27/26 . . . by photoelectric detection, e.g. of sprocket holes
27/28 . . . by using information signals recorded by the same method as the main recording ([G11B 27/22 takes precedence])
27/30 . . . on the same track as the main recording
27/3009 . . . [used signal is a pilot signal inside the frequency band of the recorded main information signal]
27/3018 . . . [used signal is a pilot signal outside the frequency band of the recorded main information signal]
27/3027 . . . . . . [used signal is digitally coded]
27/3036 . . . . [Time code signal]
27/3045 . . . . [superimposed on the recorded main signal, e.g. burn-in-time code]
27/3054 . . . . [Vertical Interval Time code [VITC]]
27/3063 . . . . [Subcodes]
27/3072 . . . [Coded signal uses a correlation function for detection]
27/3081 . . . [used signal is a video-frame or a video-field (P.I.P.)]
27/309 . . . . . [Table of contents]
27/32 . . . . on separate auxiliary tracks of the same or an auxiliary record carrier
27/321 . . . . [used signal consists of two 180-degr. phase shifted signals of the same frequency]
27/322 . . . . [used signal is digitally coded]
27/323 . . . . [Time code signal, e.g. on a cue track as SMPTE- or EBU-time code]
27/324 . . . . [Duty cycle modulation of control pulses, e.g. VHS-CTL-coding systems, RAPID-time code, VASS- or VISS-cue signals]
27/325 . . . . [Subcodes]
Arrangements for the associated working of recording or reproducing apparatus with related apparatus (with cameras or projectors G03B 31/00)

31/00

Constructionsal parts, details or accessories not provided for in the preceding groups (containers, packaging elements or packages specially adapted for record carriers B65D 85/00)

33/00

Arrangements for the associated working of recording or reproducing apparatus with related apparatus (with cameras or projectors G03B 31/00)

33/02

Cabinets; Cases; Stands;Disposition of apparatus therein or thereon (furniture aspects A47B, e.g. A47B 81/06; showing stands, hangers or shelves adapted for particular articles A47F 7/00; albums for record carriers, e.g. discs B42F 5/005; suspended filing appliances for record carriers, e.g. discs B42F 15/0005; fastening devices for wings, e.g. covers E05C; for holding wings in one or more opened positions E05C 17/00; hinges E05D; closers or openers of wings, e.g. with braking or counter-balancing devices E05E))

33/022

Cases

33/025

Portable cases

33/027

Covers (G11B 33/022 takes precedence; with means for guiding the record carrier G11B 17/34)

33/04

modified to store record carriers (i.e. containers, storing means adapted for cooperation with the recording or reproducing apparatus G11B 23/02)

33/0405

for storing discs (anti-theft cases with locking means E05B 73/0023)

33/0411

Single disc boxes (G11B 33/0461 takes precedence)

33/0416

for disc cartridges

33/0422

for discs without cartridge

33/0427

comprising centre hole locking means

33/0433

Multiple disc containers (G11B 33/0461 takes precedence)

33/0438

for disc cartridges

33/0444

for discs without cartridge

33/045

comprising centre hole locking means

33/0455

for single disc boxes

33/0461

Disc storage racks

33/0466

for disc cartridges

33/0472

for discs without cartridge

33/0477

comprising centre hole locking means

33/0483

for single disc boxes

33/0488

in boxes or containers comprising additional sound reproducing or activating means

33/0494

packages made by folding

33/06

combined with other apparatus having a different main function

33/08

Insulation or absorption of undesired vibrations or sounds

33/10

Indicating arrangements; Warning arrangements (G11B 15/04, G11B 19/04, G11B 27/34, G11B 27/36 take precedence)

33/12

Disposition of constructional parts in the apparatus, e.g. of power supply, of modules

33/121

the apparatus comprising a single recording/reproducing device

33/122

Arrangements for providing electrical connections, e.g. connectors, cables, switches

33/123

Mounting arrangements of electrical connections, e.g. connectors, cables, switches

33/126

Mounting arrangements of constructional parts onto a chassis

33/128

of the plurality of recording/reproducing devices, e.g. disk drives, onto a chassis

33/14

Reducing influence of physical parameters, e.g. temperature change, moisture, dust

33/1406

Reducing the influence of the temperature

33/1413

by fluid cooling

33/142

by air cooling

33/1426

by cooling plates, e.g. fins

33/1433

by reducing the effects of the thermal expansion

33/144

by detection, control, regulation of the temperature

33/1446

Reducing contamination, e.g. by dust, debris

33/1453

by moisture

33/146

constructional details of filters

33/1466

sealing gaskets, (gasket in general F16J)

33/1473

(of/from bearings)

33/148

Reducing friction, adhesion, drag

33/1486

Control/regulation of the pressure, e.g. the pressure inside the housing of a drive

33/1493

Electro-Magnetic Interference [EMI] or Radio Frequency Interference [RFI] shielding; grounding of static charges
Recording or reproducing using a method not covered elsewhere in this subclass

Card-like record carriers
Disc-shaped record carriers
Discs having both read-only and rewritable or recordable areas containing application data; Partial ROM [PROM] media
Read-only discs
Recordable discs
Rewritable discs
Write-once discs
characterised in that the disc has a specific layer structure
Double-sided discs, i.e. two recording layers accessed from opposite sides
Multilayer discs, i.e. multiple recording layers accessed from the same side
having exactly two recording layers
caracterised in that the disc is based on a specific recording technology
Holographic discs; Holographic digital data storage [HDDS]
Magnetic discs
Floppy disks
Hard disks
Patterned or quantised magnetic media, i.e. bits are stored in predefined single domain elements
MO disc using magnetic super resolution, i.e., the magnetic mark is smaller than the laser spot size
Optical discs
Blu-ray discs; Blue laser DVR discs
CDs
CD-I, i.e. CD-interactive
CD-V [CD-Video], CDV, or CD+V, as defined in IEC 61104
CD-XA format, i.e. eXtended architecture extension of the CD-ROM standard
DVDs [digital versatile discs]; Digital video discs; MMCs; HDCD
DVDs belonging to the minus family, i.e. -R, -RW, -VR
DVDs belonging to the plus family, i.e. +R, +RW, +VR
DVD-RAMs
HD-DVDs [high definition DVDs]; AODs [advanced optical discs]
wherein two standards are used on a single disc, e.g. one DVD section and one CD section
Laser Discs; Optical disc using analog recording
SFFO discs, i.e. small form factor optical discs; Portable blue

Super-resolution optical discs, i.e. optical discs wherein the size of marks is below the optical diffraction limit
Combinations of multiple record carriers
Flat as opposed to hierarchical combination, e.g. library of tapes or discs, CD changer, or groups of record carriers that together store one title
Distributed storage methods, i.e. the system may autonomously determine for a storage device that provides enough storage capacity for recording
Redundant array of inexpensive disks [RAID] systems
Redundant array of inexpensive tapes [RAIT] systems
Hierarchical combination of record carriers, e.g. HDD for fast access, optical discs for long term storage or tapes for backup
said record carriers being in one device and being used as primary and secondary/backup media, e.g. HDD-DVD combo device, or as source and target media, e.g. PC and portable player
Solid state media (details of solid state memory devices G11C)
wherein solid state memory is used for storing A/V content (storing computer data in solid state memories G06F)
wherein solid state memory is used as a supplementary storage medium to store auxiliary data for detecting or correcting errors on a main storage medium
wherein solid state memory is used for storing indexing information or metadata
said memory being attached to the recording medium
Memory in cassette [MIC]
Memory in disc [MID]
Indexing information stored in optical or magnetic or other strip attached to cassette or disc, e.g. barcodes attached to a recording medium
Tape-like record carriers
Helical scan format, wherein tracks are slightly tilted with respect to tape direction, e.g. VHS, DAT, DVC, AIT or exabyte
Digital audio tape [DAT] format
Digital data storage [DDS] format
Longitudinal format, wherein tracks are in the direction of the tape, read with a static head, e.g. DCC
Serpentine format, wherein a single track or group of tracks traverses the tape plural times from one end to the other
Digital linear tape [DLT] format
Linear tape open [LTO] format