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; electrography, 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.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups are classified in the following CPC groups:

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<td>G11B 9/12 - G11B 9/14</td>
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2. 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  

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 takes 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 G10K 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 3/24)]

3/085  

using automatic means (G11B 3/095 takes precedence ; if particular 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]
3/12 . . . 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 stylas 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 . . . . . . . [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 19/2009

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 on to 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
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 conditioning of heads, e.g. biasing]
2005/001 . . . . . . [Controlling recording characteristics of record carriers or transducing characteristics of transducers by means not being part of their structure]
2005/0013 . . . . . . [of transducers, e.g. linearisation, equalisation]
2005/0016 . . . . . . [of magnetoresistive transducers]
2005/0018 . . . . . . [by current biasing control or regulation]
2005/0021 . . . . . . [Thermally assisted recording using an auxiliary energy source for heating the recording layer locally to assist the magnetization reversal]
2005/0024 . . . . . . [Microwave assisted recording]
2005/0026 . . . . . . [Pulse recording]
2005/0029 . . . . . . [using magnetisation components of the recording layer disposed mainly perpendicularly to the record carrier surface]
2005/0032 . . . . . . [Transducing means or record carriers including or interacting with each other through interposition of, a physically controllable magnetic flux masking or focusing element]
2005/0034 . . . . . . [switchable at least locally between two different physical states, e.g. magnetic and non-magnetic]
2005/0037 . . . . . . [using superconductive elements]
5/004 . . . . . . Recording on, or reproducing or erasing from, magnetic drums (G11B 1900) takes precedence
5/008 . . . . . . Recording on, or reproducing or erasing from, magnetic tapes, sheets, e.g. cards, or wires (G11B 1500) (G11B 1900) take precedence; bulk transferring of information magnetisation for re-recording G11B 5/865; marking record carriers in digital fashion (G06K)
5/0084 . . . . . . [magnetic sheets (rotating sheets G11B 5/012)]
5/0085 . . . . . . [magnetic cards]
5/0086 . . . . . . [magnetic tapes]
5/0087 . . . . . . [on longitudinal tracks only, e.g. for serpentine format recording]
5/0088 . . . . . . [using stationary heads]
5/0089 . . . . . . [comprising a plurality of single poles or gaps or groups thereof operative at the same time]
5/008A . . . . . . [for parallel information processing, e.g. PCM recording]
5/008B . . . . . . [using virtual scanning heads]
5/008C . . . . . . [using cyclically driven heads providing segmented tracks]
2005/008D . . . . . . [allowing digital compact cassette (DCC) format recording]
5/008E . . . . . . [on transverse tracks (G11B 5/00878 takes precedence)]
5/008F . . . . . . [using stationary heads]
5/009 . . . . . . [comprising a plurality of single poles or gaps or groups thereof operative in time sequence]
5/009A . . . . . . [using cyclically driven heads providing segmented tracks]
5/009B . . . . . . [for transducing on more than one segment simultaneously]
5/009C . . . . . . [the segments being disposed in different lateral zones of the tape]
5/009D . . . . . . [the segments being disposed in different longitudinal zones of the tape]
5/009E . . . . . . [transducing different track configurations or formats on the same tape]
5/009F . . . . . . [configurations only, e.g. longitudinal and transverse]
5/009G . . . . . . [simultaneously]
5/009H . . . . . . [formats only, e.g. analog and digital]
5/009I . . . . . . [simultaneously]
5/012 . . . . . . Recording on, or reproducing or erasing from, magnetic disks (G11B 17/00, G11B 19/00 take precedence)
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]
G11B

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))


5/232 [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 5/49 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 1000)

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, adaptions 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 5/3196 takes precedence)
{magnetic layers}

{Shield layers on both sides of the main pole, e.g. in perpendicular magnetic heads}

{including at least one magnetic thin film coupled by interfacing to the basic magnetic thin film structure}

{providing interaction by induced or exchange coupling}

{superconductive layers}

{Fabrication methods or processes specially adapted for a particular head structure, e.g. using base layers for electroplating, using functional layers for masking, using energy or particle beams for shaping the structure or modifying the properties of the basic layers}

{Testing or indicating in relation thereto, e.g. before the fabrication is completed}

{Working or finishing the interfacing surface of heads, e.g. lapping of heads}

{Batch fabrication, i.e. producing a plurality of head structures in one batch}

{Structure of heads comprising at least in the transducing gap regions two magnetic thin films disposed respectively at both sides of the gaps (G11B 5/2455, G11B 5/265 take precedence; composite magnetic head structures, e.g. "Metal-In-Gap" heads are classified in G11B 5/127 or G11B 5/187 and subgroups)}

{the films being mainly disposed in parallel planes}

{intersecting the gap plane, e.g. "horizontal head structure"}

{parallel to the gap plane, e.g. "vertical head structure"}

{Testing}

{of films or layers, e.g. continuity test}

{of thin magnetic films, e.g. functional testing of the transducing properties (G11B 5/455 takes precedence)}

{Erasing heads using permanent magnets (general details therefor G11B 5/133 - G11B 5/255)}

{Structure or manufacture of flux-sensitive heads, [i.e. for reproduction only; Combination of such heads with means for recording or erasing only] (\{Single head using magnetic domains for scanning G11B 5/4946; multiple head for scanning G11B 5/4907 and subgroups\} ; general details therefor G11B 5/133 - G11B 5/255)}

{using thin films (G11B 5/372, G11B 5/3903 take precedence)}

{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 5/29 takes precedence) (using Hall or Hall-related effect, e.g. planar-Hall effect or pseudo-Hall effect)}

{in magnetic thin films}

{Integrated structures}

{in semi-conductors (G11B 5/372 takes precedence)}

{Integrated structures}

{using magneto-resistive devices [or effects]}

{using magnetic thin film layers or their effects, the films being part of integrated structures}

{Details related to the use of magnetic thin film layers or to their effects}

{Arrangements using a magnetic tunnel junction}

{Arrangements in which the active read-out elements are transducing in association with active magnetic shields, e.g. magnetically coupled shields (G11B 5/3916 takes precedence)}

{Arrangements in which the active read-out elements are coupled to the magnetic flux of the track by at least one magnetic thin film flux guide}

{the guide being interposed in the flux path}

{the read-out elements being disposed in magnetic shunt relative to at least two parts of the flux guide structure}

{the two parts being thin films}

{Disposition of magnetic thin films not used for directly coupling magnetic flux from the track to the MR film or for shielding}

{Magnetic biasing films}

{Flux closure films not being part of the track flux guides}

{the flux closure films being used for absorbing or reducing demagnetising or saturating fields}

{the flux closure films being used for providing a closed magnetic circuit to the MR film}

{Heads comprising more than one sensitive element}

{the sensitive elements being active read-out elements}

{the active elements being arranged on several parallel planes}

{the active elements transducing on a single track}

{the active elements being arranged in a single plane, e.g. "matrix" disposition}

{disposed at an angle to the direction of the track or relative movement}

{for transducing on a single track}

{Composite structural arrangements of transducers, e.g. inductive write and magnetoresistive read (G11B 5/3906 takes precedence)}
G11B 15/12
carriers G11B 15/60
carriers and head G11B 15/18
increase the relative speed (driving of both record
of heads, e.g. for scanning the record carrier to
head within housing G11B 5/105; guiding record
) ; arrangements
Disposition or mounting of heads { or head
) }
(demagnetisation in general H01F 13/00)
Arrangements for demagnetisation of heads
{ measuring properties for shaping or assembling
(G01R G11B 5/127; Arrangements for functional testing of
G11B 23/50)
Cleaning of heads { (of record carriers
G11B 23/50)
Arrangements for functional testing of
heads [testing of the manufacturing process
G11B 5/127]; Measuring arrangements for heads
(measuring electric or magnetic properties G11B;
measuring properties for shaping or assembling
elements G11B 5/127)]
{ by using a spin-stand, i.e. a spinning disc or
simulator}
Arrangements for demagnetisation of heads
(demagnetisation in general H01F 13/00)
Disposition or mounting of heads [ or head
supports] relative to record carriers [(mounting of
head within housing G11B 5/105); arrangements
of heads, e.g. for scanning the record carrier to
increase the relative speed (driving of both record
carriers and head G11B 15/18; guiding record
carriers G11B 15/60; head selecting circuits
G11B 15/12)]
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 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)
{Disposition of heads (G11B 5/49, G11B 5/52
take precedence)
{relative to rotating disc)
{relative to moving tape)
Fixed mounting { or arrangements, e.g. one head
per track)
{Details for scanning (G11B 5/4969 takes
precedence)
{Structure of specially adapted heads
(G11B 5/3906 takes precedence)
{in which zones of the transducing part are
being physically controllable)
{Control of magnetic properties, e.g.
saturation, anisotropy)
{of thin magnetic films)
{for formation or displacement
of magnetic domains, e.g. walls, bubbles)
{part of the structure being mechanically
or magnetically coupled to or decoupled
from, the transducing part)
{Circuits)
{Details for track selection or addressing)
{Disposition of heads, e.g. matrix
arrangement)
{Structure of specially adapted switching
heads (G11B 5/3958 takes precedence)
{Circuits)
{Interchangeable mountings, e.g. for replacement
of head without readjustment)
{with simultaneous movement of head and record
carrier, e.g. rotation of head (G11B 5/588 takes
precedence)
{Disposition or mounting of heads on rotating
support)
{Disposition of more than one recording
or reproducing head on support rotating
cylically around an axis)
{Parallel to the direction of movement of
the tape, e.g. for transversal scanning)
{inclined relative to the direction of
movement of the tape, e.g. for helicoidal
scanning)
{perpendicular to the direction of
movement of the tape, e.g. for longitudinal
scanning)
{with all the heads disposed in a plane
substantially parallel to the plane of the
tape, e.g. for circular scanning)
5/538 . . . . {Disposition or mounting of pole pieces on rotating support (magnetic switching of fixed head arrangements G11B 5/49)}
5/54 . . with provision for moving the head into or out of its operative position or across tracks (G11B 5/58 takes precedence)
5/55 . . . . Track change, selection or acquisition by displacement of the head
5/5504 . . . . [across tape tracks]
5/5508 . . . . [Control circuits therefor (G11B 5/5513 takes precedence)]
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 5/596

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}
5/5534 . . . . . [Initialisation, calibration, e.g. cylinder "set-up"]
5/5539 . . . . . [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 5/556 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 . . . . . [across tape tracks]
5/581 . . . . . [across drum tracks (spiral track following G11B 5/596)]
5/582 . . . . . [Control circuits therefor (G11B 5/5521 and G11B 5/596)]
5/583 . . . . . [using repulsion generated by superconductors in a magnetic field, e.g. by "Meissner effect"]

5/584 . . . . . for track following on tape
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]
5/5927 . . . . . [Helicoidal tracks]
5/5928 . . . . . [Longitudinal tracks]
5/596 . . . . . [across disk tracks (spiral track following G11B 5/596)]

**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)]
5/59622 . . . . . [Gain control; Filters]
5/59627 . . . . . [Aligning for runout, eccentricity or offset compensation (G11B 5/5534, G11B 5/59677, G11B 5/59688 take precedence)]
compositions, material ( selection of magnetic materials in general); thin magnetic films H01F 10/00
record carriers characterised by the selection of the film material }

{ characterised by the dispersing agent }
{ containing cellulosic derivates ( G11B 5/7022 takes precedence ) }
{ containing Fe metal or alloys ( G11B 5/70621 takes precedence ) }
{ containing Co metal or alloys }
{ containing non-magnetic substances }
{ containing mixtures of polyurethanes or polysiocanates with other polymers }
{ containing polyesters, polyethers, silicones, polyvinyl resins, polycrylicresins or epoxy resins ( G11B 5/7022 takes precedence ) }
{ containing Fe metal or alloys ( G11B 5/70621 takes precedence ) }
{ containing Co metal or alloys }
{ containing non-magnetic substances }
{ containing mixtures of polyurethanes or polysiocanates with other polymers }
{ containing polyesters, polyethers, silicones, polyvinyl resins, polycrylicresins or epoxy resins ( G11B 5/7022 takes precedence ) }

Fluid-dynamic spacing of heads from record-carriers

( Control of flying height )
{ using capacitive measurement }
{ using inductive measurement }
{ Measurement using values derived from the data signal read from the disk } }
characterised by the dimension of the magnetic particles

characterised by two or more magnetic layers

at least one on each side of the base layer

Protective coatings, e.g. antistatic, antifriction [containing an anticorrosive material]

containing a lubricant

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.

{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 5/733, 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.

{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 5/736 - 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.

{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.

{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.

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 . . . { 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 5/739 - G11B 5/73937.

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 5/735 and G11B 5/7353 should be 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 }
[Seed layer, e.g. at least one non-magnetic layer is specifically adapted as a seed or seeding layer]

[Magnetic recording media substrates]

**WARNING**


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

[Inorganic substrates]

[Composites or coated substrates]

[Silicon compound based coating]

[ Metallic substrates, i.e. elemental metal or metal alloy substrates]

[ Aluminium or titanium elemental or alloy substrates]

[ Glass or ceramic substrates]

[ Organic polymer substrates]

[ Composite or coated non-esterified substrates]

[ Polyester substrates, e.g. polyethylene terephthalate]

[ comprising naphthalene ring compounds, e.g. polyethylene naphthalate substrates]

[ Two or more layers, at least one layer being polyester]

[ Surface treated layers, e.g. treated by corona discharge]

[ characterised by roughness or surface features, e.g. by added particles]

[ Substrates having an organic polymer comprising a ring structure]

Record carriers characterised by the form, e.g. sheet shaped to wrap around a drum

Patterned record carriers, wherein the magnetic recording layer is patterned into magnetic isolated data islands, e.g. discrete tracks

Bit Patterned record carriers, wherein each magnetic isolated data island corresponds to a bit

Drum carriers

Tape carriers

Card carriers

Disk carriers

[flexible discs]

Processes or apparatus specially adapted for manufacturing record carriers (processes involving a single technical art, in general, and for which provision exists elsewhere, see the relevant places, e.g. B29, C23, C25D; apparatus or processes for applying homogeneous magnetic films to substrates in general H01F 41/14)

[ manufacturing base layers]

[ protecting the magnetic layer]

[ treatment by ultrasounds]

[ coating a support with a magnetic layer by precipitation]

Coating a support with a liquid magnetic dispersion

in a magnetic field

Coating a support with a magnetic layer by extrusion

Coating a support with a magnetic layer by vapour deposition

Coating a support with a magnetic layer by sputtering

Orientation in a magnetic field (G11B 5/845 takes precedence)

Coating only part of a support with a magnetic layer

Producing a magnetic layer by electro-plating or electroless plating

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

(by contact “printing”)

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)

[ Recording, reproducing or erasing systems characterised by the structure or type of the carrier]

[ adapted for scanning different types of carrier, e.g. CD & DVD]

[ for carriers having data stored in three dimensions, e.g. volume storage]

[ for carriers having multiple discrete layers]

[ 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]

Recording, reproducing or erasing systems characterised by the shape [or form] of the carrier

with cylinders or cylinder-like carriers [or cylindrical sections or flat carriers loaded onto a cylindrical surface], e.g. truncated cones

with webs, [filaments or wires], e.g. belts, spooled tapes or films of quasi-infinite extent

[using a rotating head, e.g. helicoidal recording]

[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, pre-pits, 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 erosion 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 pre-pits G11B 7/00745; 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, pre-pits]
2007/0136 . . [where each location can have more than two values (‘multivalue’), for data or pre-pits]
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 1/29]
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]
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

{ for track following only (G11B 7/0925, G11B 7/0941, G11B 7/0943, G11B 7/0945, G11B 7/0946, G11B 7/0948 take precedence) }

{ Multi-beam tracking systems }

{ Dithered tracking systems }

{ Differential phase difference systems }

{ for focusing only (G11B 7/0925, G11B 7/0941, G11B 7/0943, G11B 7/0945, G11B 7/0946, G11B 7/0948 take precedence) }

{ by astigmatic methods }

{ by far-field method }

{ by push-pull method }

{ by non-optical methods, e.g. capacitive }

{ Foucault or knife-edge methods }

{ Focus-error methods other than those covered by G11B 7/0909 - G11B 7/0916 }

{ Critical angle methods }

{ Dither methods }

{ Far-field methods }

{ Skewed beams methods (using an angled beam, i.e. a beam which is reflected from the disc at an angle different from 90°) }

{ Electromechanical actuators for lens positioning (G11B 7/0857 takes precedence) }

{ for focusing only (G11B 7/0937 takes precedence) }

{ for tracking only (G11B 7/0937 takes precedence) }

{ for focusing and tracking (G11B 7/0932 - G11B 7/0937 take precedence) }

{ Details of sprung supports }

{ Details of stationary parts }

{ Details of the moving parts }

{ Piezo-electric actuators }

{ servo format, e.g. guide tracks, pilot signals }

{ Methods and circuits 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, dropout (G11B 7/095 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) }

{ Optical beam sources therefor, e.g. laser control circuitry specially adapted for optical storage devices; Modulators, e.g. means for controlling the size or intensity of optical spots or optical traces (electro-, magneto-, or acousto-optical modulators G02F 1/00; optical diaphragms G03B 9/02) }

{ Circuits, methods or arrangements for laser control or stabilisation }

{ Power control during transducing, e.g. by monitoring }

{ Power calibration }

{ Lasers; Multiple laser arrays (lasers per se H01S) }

{ Two or more lasers having different wavelengths }

{ Modulators (G11B 7/1245 takes precedence) }

{ Optical detectors therefor (optical detectors per se G01F; demodulating light, transferring the modulation of modulated light, frequency changing of light G02F 2/00) }

{ Arrangement of detectors in a multiple array }

{ Shape of individual detector elements }

{ Means for guiding the beam from the source to the record carrier or from the record carrier to the detector }

{ Diffractive elements, e.g. holograms or gratings (diffraction gratings per se G02B 5/18; holograms per se G02B 5/32; grating systems G02B 27/44) }

{ Double or multiple prisms, i.e. having two or more prisms in cooperation }

{ Single prisms }

{ Mirrors }
7/1365 . . . Separate or integrated refractive elements, e.g. wave plates

**NOTE**
In this group, integrated combinations of a refractive element, such as a coating element or phase plate, with another element, such as a lens, are classified in this group and in other appropriate groups for the other element.

7/1367 . . . Stepped phase plates
7/1369 . . . Active plates, e.g. liquid crystal panels or electrostrictive elements
7/1372 . . . Lenses
2007/13722 . . . [Fresnel lenses]
2007/13725 . . . [Catriodiptic lenses, i.e. having at least one internal reflective surface]
2007/13727 . . . [Compound lenses, i.e. two or more lenses co-operating to perform a function, e.g. compound objective lens including a solid immersion lens, positive and negative lenses either bonded together or with adjustable spacing]

7/1374 . . . Objective lenses { (optical objectives per se G02B 9/00) }
7/1376 . . . Collimator lenses { (collimators per se G02B 27/30) }
7/1378 . . . Separate aberration correction lenses; Cylindrical lenses to generate astigmatism; Beam expanders
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 . . . [passive]
7/13925 . . . [active, e.g. controlled by electrical or mechanical means]
7/13927 . . . [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. nonlinear optical layers or structures (cover layers for near-field media G11B 7/24059)
7/24067 . . . Combinations of two or more layers with specific interrelation
characterised by the selection of the material
of recording layers
comprising inorganic materials only, e.g. ablative layers

2007/24302 . . . {Metals or metalloids}
2007/24304 . . . {group 2 or 12 elements (e.g. Be, Ca, Mg, Zn, Cd)}
2007/24306 . . . {transition metal elements of groups 3-10}
2007/24308 . . . {transition metal elements of group 11 (Cu, Ag, Au)}
2007/2431 . . . {group 13 elements (B, Al, Ga, In)}
2007/24312 . . . {group 14 elements (e.g. Si, Ge, Sn)}
2007/24314 . . . {group 15 elements (e.g. Sb, Bi)}
2007/24316 . . . {group 16 elements (i.e. chalcogenides, Se, Te)}
2007/24318 . . . {Non-metallic elements}
2007/2432 . . . {Oxygen}
2007/24322 . . . {Nitrogen}
2007/24324 . . . {Sulfur}
2007/24326 . . . {Halides (F, Cl, Br...)}
2007/24328 . . . {Carbon}
7/2433 . . . 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
7/2437 . . . Non-metallic elements
7/244 . . . comprising organic materials only
2007/2445 . . . (containing an azulene compound)
7/245 . . . containing a polymeric component
7/246 . . . containing dyes
2007/24606 . . . {Azo-dyes}
2007/24612 . . . {two or more dyes in one layer}

2007/24618 . . . . . . {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}
2007/24624 . . . . . . {fluorescent dyes}
7/2463 . . . azulene
7/2467 . . . azo-dyes
7/247 . . . methine or polymethine dyes
2007/24705 . . . . . . {Cyanine}
2007/2471 . . . . . . {Merocyanine}
2007/24715 . . . . . . {Oxonol}
7/2472 . . . cyanine
7/2475 . . . merocyanine
7/2478 . . . oxonol
7/248 . . . porphines; azaporphines, e.g. phthalocyanines
7/249 . . . containing organometallic compounds (G11B 7/246 takes precedence)
2007/24905 . . . . . . {neutral}
2007/2491 . . . . . . {as anion}
2007/24915 . . . . . . {as cation}
7/2492 . . . neutral compounds
7/2495 . . . as anions
7/2498 . . . as cations
7/25 . . . containing liquid crystals
7/251 . . . comprising inorganic materials dispersed in an organic matrix
7/252 . . . of layers other than recording layers

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
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. B29G 3/000, B29G 3/006)

Apparatus for the mass production of optical record carriers, e.g. complete production stations, transport systems

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. B29D 17/005)

Preparation of a master, e.g. exposing photoresist, electroforming

Preparation and using a stamper, e.g. pressing or injection moulding substrates (production of optical record carriers, e.g. optical discs B29D 17/005)

Apparatus for the mass production of optical record carriers, e.g. complete production stations, transport systems

Sputtering or spin-coating layers (sputtering based on gold, silver, aluminium; spin-coating in general C23C 14/24; spin-coating in general B05D 1/005)

[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 Group 14 elements except carbon (Si, Ge, Sn, Pb)]

[containing carbon]

[containing nitrogen]

[containing oxygen]

[containing sulfur]

[containing halides (F, Cl, Br, I)]

[containing resins (based on aluminium)]

[containing resins (based on silver)]

[containing resins (based on gold)]

[containing mechanical protection elements]

[containing Group 13 elements (B, Al, Ga)]

[containing Group 14 elements (C, Si, Ge, Sn, Pb)]

[containing Group 14 elements (C, Si, Ge, Sn)]

[containing Group 14 elements except carbon (Si, Ge, Sn, Pb)]

[containing carbon]

[containing nitrogen]

[containing oxygen]

[containing sulfur]

[containing halides (F, Cl, Br, I)]

[containing resins (based on aluminium)]

[containing resins (based on silver)]

[containing resins (based on gold)]

[containing mechanical protection elements]

[containing Group 13 elements (B, Al, Ga)]

[containing Group 14 elements (C, Si, Ge, Sn, Pb)]

[containing carbon]

[containing nitrogen]

[containing oxygen]

[containing sulfur]

[containing halides (F, Cl, Br, I)]

[containing resins (based on aluminium)]

[containing resins (based on silver)]

[containing resins (based on gold)]

[containing mechanical protection elements]

[containing Group 13 elements (B, Al, Ga)]

[containing Group 14 elements (C, Si, Ge, Sn, Pb)]

[containing carbon]

[containing nitrogen]

[containing oxygen]

[containing sulfur]

[containing halides (F, Cl, Br, I)]

[containing resins (based on aluminium)]

[containing resins (based on silver)]

[containing resins (based on gold)]

[containing mechanical protection elements]

[containing Group 13 elements (B, Al, Ga)]

[containing Group 14 elements (C, Si, Ge, Sn, Pb)]

[containing carbon]

[containing nitrogen]

[containing oxygen]

[containing sulfur]

[containing halides (F, Cl, Br, I)]

[containing resins (based on aluminium)]

[containing resins (based on silver)]

[containing resins (based on gold)]

[containing mechanical protection elements]
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 {(G11B 11/002 takes precedence; see provisional also G11B 3/72)}]
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, (e.g. magneto-optical) e.g. light-induced thermo-magnetic recording, [spin magnetisation recording.] Kerr (or Faraday) effect reproducing
11/10502  .  .  .  . [characterised by the transducing operation to be executed]
11/10504  .  .  .  . [Recording (for shaping of magnetic domains G11B 11/10528, for compensation of shift G11B 11/1053)]
11/10506  .  .  .  . [by modulating only the light beam of the transducer]
11/10508  .  .  .  . [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)]
11/10517  .  .  .  . [Overwriting or erasing (G11B 11/10526 takes precedence)]
11/10519  .  .  .  . [Direct overwriting, i.e. performing erasing and recording using the same transducing means]
11/10521  .  .  .  . [using a single light spot]
11/10523  .  .  .  . [Initialising]
11/10526  .  .  .  . [Bulk initialisation or erasing, e.g. at least one whole information track with a single action]
11/10528  .  .  .  . [Shaping of magnetic domains, e.g. form, dimensions]
11/1053  .  .  .  . [to compensate for the magnetic domain drift or time shift]
11/10532  .  .  .  . [Heads]
11/10534  .  .  .  . [for recording by magnetising, demagnetising or transfer of magnetisation, by radiation, e.g. for thermomagnetic recording]
11/10536  .  .  .  . [using thermic beams, e.g. lasers]
11/10539  .  .  .  . [using electromagnetic beams, e.g. polarised light]
11/10541  .  .  .  . [for reproducing]
11/10543  .  .  .  . [using optical beam of radiation]
11/10545  .  .  .  . [interacting directly with the magnetisation on the record carrier]
11/10547  .  .  .  . [interacting with the magnetisation of an intermediate transfer element, e.g. magnetic film, included in the head]
11/1055  .  .  .  . [Disposition or mounting of transducers relative to record carriers]
11/10552  .  .  .  . [Arrangements of transducers relative to each other, e.g. coupled heads, optical and magnetic head on the same base (for relative movement of transducers G11B 11/10573)]
13/00  Recording simultaneously or selectively by methods covered by different main groups (among G11B 3/00, G11B 5/00, G11B 7/00 and G11B 9/00); Record carriers therefor {not otherwise provided for}; Reproducing therefrom {not otherwise provided for} (G11B 9/14, G11B 11/002 take precedence; driving or moving of heads G11B 3/02, G11B 5/48, G11B 7/08, G11B 21/02)

NOTE
This group is limited to the combination of recording and reproducing on the same record carrier by more than one of the different method covered by groups G11B 3/00, G11B 5/00, G11B 7/00 and G11B 9/00

13/02  . magnetically and by styli
13/04  . magnetically [or by magnetisation] and optically [or by radiation, for changing or sensing optical properties]
13/045 . {combined recording by magnetic and optic means}
13/06  . optically and by styli
13/08  . using near-field interactions or transducing means and at least one other method or means for recording or reproducing

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, e.g. switching from recording to reproducing 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)
15/005 . {programmed access in sequence to indexed heads 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 15/08 takes precedence)
by sensing features present on or derived from record carrier or container (G11B 15/16 takes precedence)

**NOTE**

see provisional also G11B 15/02

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

by photoelectric sensing (G11B 15/07 takes precedence)

by sensing recorded signals

**NOTE**

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

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

Manually-operated control; Solenoid-operated control (G11B 15/44 takes precedence)

[electrically operated]

[mechanically operated]

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]

[conditioned by the operating function of the apparatus]

[mechanically operated]

by sensing presence, absence or position of record carrier or container

of container

**NOTE**

see prov. also G11B 15/16

Driving; Starting; Stopping: Arrangements for control or regulation thereof (G11B 15/55 takes precedence; handling tapes or filamentary material in general B65H 23/00)

[Driving of both record carrier and head (G11B 15/467 takes precedence; mounting of head G11B 5/52)]

[Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads (see provisional also G11B 15/005)]

[driving or moving the head in a direction which cuts across the direction of travel of the tape, e.g. for helicoidal scanning]

[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)]

[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 5/58, G11B 7/085, G11B 21/08, G11B 21/10; by controlling headwheel rotation G11B 15/4733; by guiding the G11B 15/602)]

[using signals recorded in tracks disposed in parallel with the scanning direction]

[using auxiliary signals, i.e. pilot signals]

[superimposed on the main signal track]

[adaptations for special effects or editing (signal processing or indexing therefor G11B 27/00)]

[for record carriers inside containers]

[the record carrier being endless]

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

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))

Drive disengaging means

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)]

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

[through pneumatic means]

through pinch-rollers (or tape rolls) (G11B 15/292 takes precedence)

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

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

through the reels or cores on to which the record carrier is wound

through non-skip drive means, e.g. sprocket

Driving record carriers by pneumatic means (pneumatic control for capstans driving the record carrier by frictional contact G11B 15/285)
Controlling, regulating, or indicating speed

Arrangements; Drive transfer means therefor

Speed-changing arrangements; Reversing

by using reserve loops

G11B 15/56

B65H 59/00

tension in filamentary material in general

of record carrier, e.g. tape tension (controlling

by speed regulation G11B 15/46;

by using reserve loops G11B 15/56))

Controlling, regulating, or indicating speed

(by using pilot tracking tones embedded in

binary coded signals, e.g. using DSV//CDS

values of coded signals)

in arrangements for recording or reproducing

wherein both record carriers and heads are

driven (see provisional also G11B 15/1808)

(by controlling simultaneously the speed of

the tape and the speed of the rotating head)

(with provision for information tracking)

(by controlling the speed of the tape while

the head is rotating)

(with provision for information tracking)

(using signals recorded in tracks

disposed in parallel with the scanning direction)

(using auxiliary signals, i.e. pilot signals)

(superimposed on the main signal track)

by controlling the speed of the heads

NOTE

see prov. also G11B 5/588

(control of headwheel rotation (disposition

or construction of headwheel motor

G11B 5/53, G11B 21/02))

with provision for information tracking, e.g. for time base correction

(using signals recorded in tracks

disposed parallel with the scanning direction)

(using auxiliary signals, i.e. pilot signals)

(superimposed on the main signal track)

Starting; Accelerating; Decelerating;

Arrangements preventing malfunction during drive change

by mechanical linkage, e.g. clutch

by using signals recorded on, or derived from, record carrier

by stroboscope; by tachometer (speedometers or tachometers G61P)

the record carrier having reserve loop, e.g. to

minimise inertia during acceleration [measuring or

control in connection therewith]

with vacuum column

Guiding record carrier (guiding devices structurally

associated with magazines or cassettes G11B 23/04)

(for track selection, acquisition or following)

(without displacing the guiding means)

{Pneumatic guiding}

on drum, e.g. drum containing rotating heads

((G11B 15/56 takes precedence))

[inside container]

Maintaining desired spacing between record

carrier and head

by fluid-dynamic spacing

Threading; Loading; Automatic self-loading

(Positioning or locking of spool or reel)

by extracting loop of record carrier from container

(to pull the record carrier against non

rotating heads)

(to pull the record carrier against drum)

{using one loading ring, i.e. "C-type"

(G11B 15/6658 takes precedence)}

{using two-sided extraction, i.e. "M-type")

{with two loading rings rotating in

opposite directions}

by extracting end of record carrier from container or spool

(using pneumatic means)

{Extracting end of record carrier from

container or single reel (G11B 15/671

takes precedence)}

{Threading end of record carrier externally

to single reel (G11B 15/671 takes

precedence)}

{Threading or attaching end of record carrier

on or to single reel (G11B 15/671 takes

precedence)}

Guiding containers, e.g. loading, ejecting

cassettes)

{Details}

(Servo control)

[Ejection damping means]

{with movement of the cassette parallel to its

main side, i.e. front loading (G11B 15/67544

takes precedence)}

{and movement of driving elements

perpendicular thereto}

{with servo control}

{with ejection damping means}

[of cassette with internal belt drive]

{with servo control}

{with ejection damping means}

[of endless tape cassette]

{with servo control}

{with ejection damping means}

[of cassette inside drawer]

{with servo control}

{with ejection damping means}

{with movement of the cassette parallel to

its main side and subsequent movement

perpendicular thereto, i.e. front loading]
G11B

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}
15/67571 . . . {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}
15/684 . . . {the cassettes having a storage position inside the magazine and a slightly shifted active position, e.g. by solenoid}
15/6845 . . . {with rotatable magazine}
15/685 . . . {the cassettes being arranged in a single level}
15/6855 . . . {wherein the recorder or player is moved towards a selected cassette in the magazine}
15/686 . . . {with a fixed recorder or player in the centre or at the periphery of the magazine}
15/6865 . . . {with a fixed recorder or player under the magazine}
15/687 . . . {the cassettes being arranged in multiple levels}
15/6875 . . . {wherein the recorder or player is moved towards a selected cassette in the magazine}
15/688 . . . {the cassettes being transferred to a fixed recorder or player using a moving carriage}
15/6885 . . . {the cassettes being conveyed within a cassette storage location, e.g. within a storage bin or conveying by belt}
15/689 . . . {Control of the cassette changing arrangement}

15/6895 . . . {Automatic tape changing arrangements}
15/70 . . . the record carrier being an endless loop record carrier (inside container G11B 15/1891)

17/00 Guiding record carriers not specifically of filamentary or web form, or of supports therefor (guiding cards or sheets G06K 13/00)
17/005 . . . {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 clampsers}
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 clamper towards the disk}
17/03 . . . in containers or trays {(G11B 17/032, G11B 17/035 takes 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}
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 17/00); [Driving both disc and head]

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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 17/00); [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]

19/124  . . [by photo-electric sensing]

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

19/126  . . [involving the 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 G01P)

20/00 Signal processing not specific to the method of recording or reproducing; Circuits therefor
20/00007 [Time or data compression or expansion (audio compression based on psychoacoustics G10L 19/00; data processing for reproducing audio data at different playback speeds G10L 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]]
20/00005 [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]]
20/00188 [involving measures which result in a restriction to authorised devices recording or reproducing contents to/from a record carrier]
20/00195 [using a device identifier associated with the player or recorder, e.g. serial numbers of playback apparatuses or MAC addresses]
20/00202 [wherein the copy protection scheme builds on multi-session recording, e.g. defective table of contents [TOC] in the 2nd session]
20/0021 [involving encryption or decryption of contents recorded on or reproduced from a record carrier]
20/00217 [the cryptographic key used for encryption and/or decryption of contents recorded on or reproduced from the record carrier being read from a specific source (key distribution or management H04L 9/08)]
20/00224 [wherein the key is obtained from a remote server]
20/00231 [wherein the key is obtained from a local external medium, e.g. a card]
20/00239 [wherein the key is provided by a software application accessing the medium]
specific access protection standard} {the copy protection scheme being related to a
[DTCP]} {content scrambling system [CSS]} {content protection for recordable media
[CPRM]} {content protection for pre-recorded media [CPPM]} {content protection for recordable media
[CPRM]} {content scrambling system [CSS]} {digital transmission content protection
[DTCP]}

{wherein the key is obtained from a local
device, e.g. device key initially stored by the
player or by the recorder} {wherein the key is stored on the record
carrier} {the key being stored as a barcode} {said barcode being recorded in a burst
cutting area [BCA]}

{the key being stored on a chip attached to
the record carrier} {the key being stored in the content
area, e.g. program area, data area or user
area (key stored in a management area
G11B 20/00297)}

{wherein the key is stored as a
watermark} {the key being stored in a management
area, e.g. the video manager [VMG] of a
DVD} {the key being stored in the lead-in area
[LIA]} {the key being stored in the lead-out
area [LOA]}

{the key being stored in the TOC} {the key being embossed on the record
carrier} {the key being stored in header data, e.g.
in sector headers}

{the key being stored as a hologram} {wherein the medium identifier is used as a
key} {the record carrier having a label that
provides the key}

{the key being obtained from a media key
block [MKB]} {wherein a first key, which is usually
stored on a hidden channel, e.g. in the
lead-in of a BD-R, unlocks a key locker
containing a second} {the key being stored by varying the pit
format, e.g. depth, width, length or edge
positions}

{the key being derived from a physical
signature of the record carrier, e.g. unique
feature set} {the key being stored in subcodes, e.g. in
the Q subcode of a CD} {the key being stored in sync patterns}

{the key being stored by varying characteristics of the recording track, e.g. by altering the track pitch or by
modulating the wobble track} {wherein the key is input by a user}

{the copy protection scheme being related to a
specific access protection standard} {advanced access content system [AACS]}

{content protection for pre-recorded media
[CPPM]} {content protection for recordable media
[CPRM]} {content scrambling system [CSS]}

{digital transmission content protection
[DTCP]} {high-bandwidth digital content protection
[HDCP]} {video content protection system [VCPS]}

{wherein contents are decrypted and re-
encrypted with a different key when being
copied from/to a record carrier} {characterised by a specific kind of data which
is encrypted and recorded on and/or reproduced
from the record carrier}

{wherein content or user data is encrypted} {wherein only some specific parts of the
content are encrypted, e.g. encryption
limited to I-frames}

{wherein consecutive physical data units
of the record carrier are encrypted with
separate encryption keys, e.g. the key
changes on a cluster or sector basis}

{wherein the entire content is encrypted
with the same key, e.g. disc key or master
key} {wherein each session of a multisession
recording medium is encrypted with a
separate encryption key}

{wherein each title is encrypted with a
separate encryption key for each title, e.g.
title key for movie, song or data file}

{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} {said format change concerning the physical
format of the recording medium}

{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}

{said format change concerning the logical
format of the recording medium, e.g. the
structure of sectors, blocks, or frames}

{wherein the modification to the logical
format directly concerns user data}
enforcing a usage restriction}
{involving a digital rights management system for}
{involving a purchase action}

{invoking 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 a usable copy of}
{recorded data can be made on another medium}
{said measures preventing that data are read}
{from the recording medium}
{said measures preventing that data are}
{recorded 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}

{wherein the copy frequency, i.e. the}
{number of copies in a given time period, is}
{limited}
{wherein copy control information is used, e.g. for indicating whether a content may}
{be copied freely, no more, once, or never, by setting CGMS, SCMS, or CCI flags}

{wherein said copy control information is encoded in an encryption mode}
{indicator (EMI)}
{wherein the usage restriction limits the number of times a program can be installed}
{wherein the usage restriction limits the number of functional copies, which can be}
{accessed at a time, e.g. electronic bookshelf concept, virtual library, video rentals or}
{check-in/check out}
{wherein the usage restriction limits the number of times a content can be}
{reproduced, e.g. using playback counters}
{wherein the usage restriction limits the number of users or devices that are allowed}
{to access a given content}

{wherein said number is encoded as a}
{cryptographic token or ticket}
G11B

20/08 . . . Pulse-modulation recording or reproducing
(pulse-code-modulation recording G11B 20/10;
pulse modulation or pulse demodulation H03K)
20/10 . . . 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)
20/10009 . . . [Improvement or modification of read or write
signals]
20/10018 . . . [analog processing for digital
recording or reproduction (G11B 20/10237 - G11B 20/10481 take
precedence)]
20/10027 . . . [adjusting the signal strength during
recording or reproduction, e.g. variable
gain amplifiers (optimum power control for
optical discs G11B 7/125)]
20/10037 . . . [A/D conversion, D/A conversion, sampling,
slicing and digital quantisation or adjusting
parameters thereof]
20/10046 . . . [filtering or equalising, e.g. setting the tap
weights of an FIR filter]
20/10055 . . . [using partial response filtering when
writing the signal to the medium or reading it
therefrom]
20/10064 . . . [EEP4 or E2PR4, i.e. extended
partial response class 4, polynomial (1-
D)*((1+D))]
20/10074 . . . [EEP4, i.e. extended partial response class
4, polynomial (1-D)^2]
20/10083 . . . [PR1 or PR(1,1.), i.e. partial response
class 1, polynomial 1+D]
20/10092 . . . [partial response PR(1,1,1,1)]
20/10101 . . . [PR2 or PR(1,2,1), i.e. partial response
class 2, polynomial (1-D)(1+2D+D2)]
20/10111 . . . [partial response PR(1,2,2,1)]
20/1012 . . . [partial response PR(1,2,2,2,1)]
20/10129 . . . [partial response PR(1,2,3,3,2,1)]
20/10138 . . . [partial response PR(2,3,3,2,1)]
20/10148 . . . [partial response PR(1,3,3,1)]
20/10157 . . . [PR3 or PR(2,1,-1.), i.e. partial response
class 3, polynomial (1-D)(2-D)=2+D-D2]
20/10166 . . . [partial response PR(3,4,4,3)]
20/10175 . . . [PR4, PR(1,0,-1.), i.e. partial response
class 4, polynomial (1-D)(1+D)(1-D)]=1(1-D)]
20/10185 . . . [PR5 or PR(-1,2,0,-1,1, i.e. partial
response class 5, polynomial -((1+D)(1-D)^2)
=((1-D)^2)=1+2D-D4)
20/10194 . . . [using predistortion during writing
(G11B 20/10713 takes precedence)]
20/10203 . . . [baseline correction (DC correction by
choosing codewords of the modulation code
G11B 20/1426)]
20/10212 . . . [compensation for data shift (e.g. pulse
crowding effects)]
20/10222 . . . [clock-related aspects, e.g. phase or frequency
adjustment or bit synchronisation (dedicated
sync patterns in the modulation code
G11B 20/1403)]
20/10231 . . . [wherein an asynchronous, free-running
clock is used; Interpolation of sampled
signals]
20/1024 . . . [wherein a phase-locked loop [PLL] is used]
20/1025 . . . [the PLL being discrete time or digital
PLL]
20/10259 . . . [simultaneous timing recovery for multiple
parallel tracks]
20/10268 . . . [bit detection or demodulation methods]
20/10277 . . . [the demodulation process being specifically
adapted to partial response channels, e.g.
PRML decoding]
20/10287 . . . [using probabilistic methods, e.g. maximum
likelihood detectors (G11B 20/10277 takes
precedence)]
20/10296 . . . [using the Viterbi algorithm]
20/10305 . . . [signal quality assessment]
20/10314 . . . [amplitude of the recorded or reproduced
signal]
20/10324 . . . [asymmetry of the recorded or reproduced
waveform]
20/10333 . . . [wherein the asymmetry is linked to
domain bloom]
20/10342 . . . [sub-information or auxiliary signals
different from the normal recording marks,
e.g. signals reproduced from wobble tracks]
20/10351 . . . [baseline shift, DC content, bias]
20/10361 . . . [digital demodulation process]
20/1037 . . . [based on hard decisions, e.g. by
evaluating bit error rates before or after
ECC decoding]
20/10379 . . . [based on soft decisions, e.g. confidence
values, probability estimates, likelihoods
values or path metrics of a statistical
decoding algorithm]
20/10388 . . . [control of the read or write heads, e.g.
tracking errors, defocus or tilt compensation]
20/10398 . . . [jitter, timing deviations or phase and
frequency errors]
20/10407 . . . [by verifying the timing of signal
transitions, e.g. rising or falling edges, or
by analysing signal slopes]
20/10416 . . . [by verifying the timing of peak values]
20/10425 . . . [by counting out-of-lock events of a PLL]
20/10435 . . . [by verifying the timing of predetermined
signal patterns, e.g. sync patterns]
20/10444 . . . [by verifying the timing of zero crossings]
20/10453 . . . [physical shape of recording marks, e.g. their
length, width, depth or contour]
20/10462 . . . [consistency with a reference waveform
in a given time period, e.g. by calculating
correlations or mean square errors]
20/10472 . . . [derived from statistics of other quality
measures, e.g. their mean, variance or skew]
20/10481 . . . [optimisation methods]
20/1049 . . . [using closed-form solutions]
20/105 . . . [selecting parameter values from a plurality
of predetermined settings]
20/10509 . . . [iterative methods, e.g. trial-and-error,
interval search, gradient descent or feedback
loops (G11B 20/10518 takes precedence)]
20/10518 . . . [using neural networks]
20/10527 . . . [Audio or video recording; Data buffering
arrangements (G11B 20/102 - G11B 20/18 take
precedence)]
20/20537 . . . [Audio or video recording]
20/20546 . . . [specifically adapted for audio data]
{ Copying or moving data from one record carrier to another }

[20/1217] 20/1215

[20/1214]

[20/1211]

[20/1208] 20/1207

[20/1206] 20/1205

[20/1204]

[20/1203] 20/1202

[20/1201]

[20/1200] 20/1199

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discs, MCLV discs

Constant Density Recording discs, MCAV radial zones, e.g. Zone Bit Recording or { where blocks are arranged within multiple
{ Count Key Data [CKD] format }
{ Fixed Block Architecture [FBA] format }
{ discontinuous data }
{ for mixed data, i.e. continuous and
information signals, computer programme
{ for discontinuous data, e.g. digitised analog
[PCM] 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]
drop-outs }

Error detection or correction; Testing 
{ characterised by the use of more than three 
{ characterised by the use of three levels }

Synchronisation patterns; Coping with 
{ using error detecting or error correcting 
{ wherein DC control is performed by 
{ wherein an LDPC code is arranged as an 
{ wherein at least one additional attempt is 

{ by adding special lists or symbols to the coded information } 

{ by 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 }

{ by interleaving (G11B 20/1809 takes precedence) }

{ 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 }

{ with tapes }

{ with discs }

{ 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) }
Head arrangements not specific to the method of recording or reproducing

- Disposition of fixed heads, e.g. for scanning, selecting or following of tracks
- Driving or moving of heads
- Programmed access in sequence to indexed parts of operating record carriers
- for rotating discs
- of tapes
- for correcting time base error (during transducing operation, by driving or moving the head in a direction more or less parallel to the direction of travel of the recording medium, e.g. tangential direction on a rotating disc (by driving or moving the head in a direction which cuts across the direction of travel of the recording medium G11B 15/1808, G11B 15/467)

Automatic feed mechanism producing a (progressive) transducing traverse of the head in a direction which cuts across the direction of travel of the recording medium, e.g. helical scan (e.g. by lead-screw (G11B 19/20, G11B 21/08 and G11B 21/10 take precedence))

- for stationary discs
- of the feed mechanism
- the record carrier having (mechanical) means to ensure traverse movement of the head (e.g. grooves)

Track changing or selecting (G11B 21/12 takes precedence) (during transducing operation)

Access to indexed tracks or parts of continuous track

- on discs
- with track following of accessed part
- on tapes
- with track following of accessed part

Track finding or aligning by moving the head (Provisions for maintaining alignment of the head relative to the track during transducing operation, i.e. track following (characterised by the track access method G11B 21/08))

- on tapes
- on disks

Raising and lowering; Back-spacing or forward-spacing along track; Returning to starting position (otherwise than during transducing operation)

- manually

Supporting the heads; Supporting the sockets for plug-in heads while the head is moving

while the head is in operative position but stationary or permitting minor movements to follow irregularities in surface of record carrier with provision for maintaining desired spacing of head from record carrier, e.g. fluid-dynamic spacing, slider

while the head is out of operative position

Head support adjustments

Means for interchange or replacement of head or head element

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.

Circuits or methods for reducing noise, for correction of distortion, or for changing density of recorded information, (volume compression or expansion circuits per se H03G 7/00)

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Circuits or methods for reducing noise, for correction of distortion, or for changing density of recorded information, (volume compression or expansion circuits per se H03G 7/00)

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

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

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Flexible discs (G11B 23/0055 takes precedence)

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Additional layers for lubrication or wear protection (lubricating means not integrated in the record carrier structure G11B 23/50)

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Intermediate mediums using a photosensitive dielectric coatings

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Molding resin compositions

NOTE

This group is closed down and will in due course be transferred to G11B 20/22 and G11B 20/24 and subgroups

Containers; Storing means (both adapted to cooperate with the recording or reproducing means) (cabinets, cases, stands, modified to store record carriers G11B 33/04; storing webs, tapes, or filamentary material in general B65H 75/00)
23/021 . . . [comprising means for reducing influence of physical parameters, e.g. temperature, change, moisture (combined with means for reconditioning or cleaning G11B 23/037)]
23/023 . . . Containers for magazines or cassettes
23/0233 . . . [Containers for a single cassette]
23/0236 . . . [Containers for several cassettes]
23/027 . . . Containers for single reels or spools
23/03 . . . Containers for flat record carriers
23/0301 . . . [Details]
23/0302 . . . [Auxiliary features]
23/0303 . . . [Write protect features with a sliding part]
23/0305 . . . [Semiconductor memories]
23/0306 . . . [Means for locking the record carriers]
23/0307 . . . [Positioning or centering features]
23/0308 . . . [Shutters (G11B 23/0317 takes precedence)]
23/031 . . . [Indicating means, e.g. sticker, bar code]
23/0311 . . . [Wrong insertion preventing means]
23/0312 . . . [Driving features]
23/0313 . . . [Container cases]
23/0315 . . . [Materials]
23/0316 . . . [Constructional details, e.g. shape]
23/0317 . . . [Containers with interchangeable record carriers]
23/0318 . . . [Containers with incorporated transducing heads]
23/032 . . . [for rigid discs]
23/0321 . . . [rigid cartridges for single discs]
23/0322 . . . [comprising latching or movable handling devices (G11B 17/032 takes precedence)]
23/0323 . . . [for disc-packs]
23/0325 . . . [comprising latching or movable handling devices (G11B 17/038 takes precedence)]
23/0326 . . . [Assembling of containers]
23/0327 . . . [for special applications not otherwise provided for]
23/0328 . . . [the disc having to be extracted from the cartridge for recording reproducing, e.g. cooperating with an extractable tray]
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}
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 . . . [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]
23/08777 . . . . . . . [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]
23/18 . . Record carriers with multiple tracks, e.g. with complementary and partial tracks such as paired "stereo" tracks [contains no documents]
23/20 . . with provision for splicing to provide permanent or temporary connections
23/22 . . . . . . . . . . . . . of endless belts; of tapes forming Moebius loops
23/24 . . . . . . . . . . . . . of tapes having multiple tracks parallel to edge of record carrier by offset splicing to form endless loop with one or more helical tracks
23/26 . . . . . . . . . . . . . . . . . . of leaders for loading or threading, e.g. to form a temporary connection
23/28 . . . . . . . . . . . . . . . . . . Indicating (or preventing) prior or unauthorised use, e.g. cassettes with sealing or locking means, write-protect devices for discs (write-protect devices for tapes G11B 23/042, G11B 23/08714; dummy cassettes for locking in the drive G11B 33/005)]
23/281 . . . . . . . . . . . . . . . . . . (by changing the physical properties of the record carrier)
23/282 . . . . . . . . . . . . . . . . . . [Limited play]
23/283 . . . . . . . . . . . . . . . . . . [Security features, e.g. digital codes]
23/284 . . . . . . . . . . . . . . . . . . [on the record carrier]
23/285 . . . . . . . . . . . . . . . . . . [on the container or cartridge]
23/286 . . . . . . . . . . . . . . . . . . [Antithief arrangements, e.g. Electronic Article Surveillance (EAS) tags]
23/287 . . . . . . . . . . . . . . . . . . [by mechanical lock]
23/288 . . . . . . . . . . . . . . . . . . [Protecting disks from being written or overwritten]
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 5/283)]

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 therefor

27/04 . using differential drive of record carrier and head (transferred to G11B 15/1875)

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 5/54, 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]
27/326 . . . . . . . (used signal is a video-frame or a video-
field (P.I.P.))
27/327 . . . . . . . [Table of contents]
27/328 . . . . . . . [on a tape [TTOC]]
27/329 . . . . . . . [on a disc [VTOC]]
27/34 . . . . Indicating arrangements (indicating measured
values in general G01D (indicating means
incorporated in magazine or cassette
G11B 23/046 and G11B 23/0875))
27/36 . Monitoring, i.e. supervising the progress of
recording or reproducing {for digital recording
G11B 20/00 and s.g., for monitoring, testing or
measuring of TV recorders, e.g. H04N 5/76 and subgroups, see H04N 17/06)
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
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 constructional parts onto a chassis]
33/124 . . . . [of the single recording/reproducing device, e.g. disk drive, onto a chassis]
33/125 . . . [the apparatus comprising a plurality of recording/reproducing devices, e.g. modular arrangements, arrays of disc drives]
33/126 . . . [Arrangements for providing electrical connections, e.g. connectors, cables, switches]
33/127 . . . [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]

2209/00 Recording or reproducing using a method not covered elsewhere in this subclass
2209/02 . . . transducing on or investigating record carriers or information recording transducers or systems by using near-field interactions

2220/00 Record carriers by type
2220/17 . . . Card-like record carriers
2220/20 . . . Disc-shaped record carriers
2220/21 . . . characterised in that the disc is of read-only, rewritable, or recordable type
2220/211 . . . Discs having both read-only and rewritable or recordable areas containing application data; Partial ROM [PROM] media
2220/213 . . . Read-only discs
2220/215 . . . Recordable discs
2220/216 . . . Rewritable discs
2220/218 . . . Write-once discs
2220/23 . . . characterised in that the disc has a specific layer structure
2220/232 . . . Double-sided discs, i.e. two recording layers accessed from opposite sides
2220/235 . . . Multilayer discs, i.e. multiple recording layers accessed from the same side
2220/237 . . . having exactly two recording layers
2220/25 . . . characterised in that the disc is based on a specific recording technology
2220/2504 . . . Holographic discs; Holographic digital data storage [HDDS]
2220/2508 . . . Magnetic discs
2220/2512 . . . Floppy disks
2220/2516 . . . Hard disks
2220/252 . . . Patterned or quantised magnetic media, i.e. bits are stored in predefined single domain elements
2220/2525 . . . Magneto-optical [MO] discs
2220/2529 . . . Mini-discs
2220/2533 . . . MO disc using magnetic super resolution, i.e., the magnetic mark is smaller than the laser spot size
2220/2537 . . . Optical discs
2220/2541 . . . Blu-ray discs; Blue laser DVR discs
2220/2545 . . . CDs
2220/255 . . . . CD-I, i.e. CD-interactive
2220/2554 . . . . CD-V [CD-Vdeo], CDV, or CD+V, as defined in IEC 61104
2220/2558 . . . . CD-XA format, i.e. extended architecture extension of the CD-ROM standard
2220/2562 . . . . DVDs [digital versatile discs]; Digital video discs; MMCDS; HDCDs
2220/2566 . . . . DVDs belonging to the minus family, i.e. -R, -RW, -VR
2220/257 . . . . DVDs belonging to the plus family, i.e. +R, +RW, +VR
2220/2575 . . . . DVD-RAMs
2220/2579 . . . . HD-DVDs [high definition DVDs]; AODs [advanced optical discs]
2220/2583 . . . . wherein two standards are used on a single disc, e.g. one DVD section and one CD section
2220/2587 . . . . Laser Discs; Optical disc using analog recording
2220/2591 . . . . SFFO discs, i.e. small form factor optical discs; Portable blue
2220/2595 . . . . Super-resolution optical discs, i.e. optical discs wherein the size of marks is below the optical diffraction limit
2220/40 . . . Combinations of multiple record carriers
2220/41 . . . 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
2220/42 . . . Distributed storage methods, i.e. the system may autonomously determine for a storage device that provides enough storage capacity for recording
2220/415 . . . Redundant array of inexpensive disks [RAID] systems
2220/417 . . . 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