

# CPC COOPERATIVE PATENT CLASSIFICATION

## G PHYSICS (NOTES omitted)

### INSTRUMENTS

#### G11 INFORMATION STORAGE

**G11B INFORMATION STORAGE BASED ON RELATIVE MOVEMENT BETWEEN RECORD CARRIER AND TRANSDUCER** (recording measured values in a way that does not require playback through a transducer [G01D 9/00](#); 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](#); circuits for coupling output of reproducer to radio receiver [H04B 1/20](#); gramophone pick-ups or like acoustic electromechanical transducers or circuits therefor [H04R](#))

#### NOTES

- 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 }
- 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.
- 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](#).
- 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.
- "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.
- Attention is drawn to the notes of subclass [G11C](#).

#### WARNINGS

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

<a href="#">G11B 5/673</a>	covered by	<a href="#">G11B 5/66</a> and <a href="#">G11B 5/672</a> - <a href="#">G11B 5/678</a>
<a href="#">G11B 5/738</a>	covered by	<a href="#">G11B 5/73</a> , <a href="#">G11B 5/733</a> , <a href="#">G11B 5/7334</a> and <a href="#">G11B 5/736</a> - <a href="#">G11B 5/7377</a>
<a href="#">G11B 7/30</a>	covered by	<a href="#">G11B 7/00</a>

G11B

G11B

(continued)

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**    **Recording by mechanical cutting, deforming or pressing, e.g. of grooves or pits; Reproducing by mechanical sensing; Record carriers therefor**  
**(G11B 11/00, {G11B 13/00} take precedence)**
- 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
- 3/04     . . Multiple, convertible, or alternative transducing arrangements
- 3/06     . . Determining or indicating positions of head
- 3/08     . . Raising, lowering, traversing otherwise than for transducing, arresting, or holding-up heads against record carriers {(for transducing G11B 3/12, G11B 3/34)}
- 3/085    . . . using automatic means (G11B 3/095 takes precedence ; if particularly adapted for record-changers see G11B 17/16 and subgroups)
- 3/08503 . . . . {Control of drive of the head}
- 3/08506 . . . . {for pivoting pick-up arms}
- 3/08509 . . . . . {using mechanical detecting means}
- 3/08512 . . . . . {using optical detecting means}
- 3/08516 . . . . . {using magnetic detecting means}
- 3/08519 . . . . . {for pick-up arms moving parallel to itself}
- 3/08522 . . . . . {using mechanical detecting means}
- 3/08525 . . . . . {using optical detecting means}
- 3/08529 . . . . . {using magnetic or electric detecting means}
- 3/08532 . . . . . {for fixed arms carrying a movable head}
- 3/08535 . . . . {Driving the head}
- 3/08538 . . . . . {the head being driven by the same means as the record can}
- 3/08541 . . . . . {for pivoting pick-up arms}
- 3/08545 . . . . . {driven by cams}
- 3/08548 . . . . . {using friction coupling}
- 3/08551 . . . . . {for the horizontal movement only}
- 3/08554 . . . . . {for pick-up arms moving parallel to itself}
- 3/08558 . . . . . {driven by belt or analogous element}
- 3/08561 . . . . . {driven by non-skip driving means, e.g. lead screw}
- 3/08564 . . . . . {the head being driven by means independent of the record carrier driving means}
- 3/08567 . . . . . {for pivoting pick-up arms}
- 3/0857    . . . . . {driven by means which support the pick-up arm}
- 3/08574 . . . . . {the supporting element being different from the rotation-axes}
- 3/08577 . . . . . {for the vertical movement only}
- 3/0858    . . . . . {using mechanical means}
- 3/08583 . . . . . {using electrical/magnetic means}
- 3/08587 . . . . . {for pick-up arm moving parallel to itself}
- 3/0859    . . . . . {driven by belt or analogous element}
- 3/08593 . . . . . {driven by non-skip driving means, e.g. lead screw}
- 3/08596 . . . . . {for fixed arms carrying a movable head}
- 3/09     . . . using manual means only (G11B 3/095 takes precedence)
- 3/091    . . . . {using magnetic means (G11B 3/093 takes precedence)}
- 3/092    . . . . {using mechanical means (G11B 3/093 takes precedence)}
- 3/093    . . . . {Means coupled to the cover}
- 3/095    . . . for repeating a part of the record; for beginning or stopping at a desired point of the record
- 3/0952    . . . . {using automatic means}
- 3/0955    . . . . {using mechanical means for detecting the end of the recording}
- 3/0957    . . . . {using optical means for detecting the end of the recording or the desired point thereof}
- 3/10     . . Arranging, supporting, or driving of heads or of transducers relatively to record carriers {(guiding record carriers G11B 17/00, driving record carriers G11B 19/00)}
- 3/12     . . . Supporting in balanced, counterbalanced or loaded operative position {during transducing}, e.g. loading in direction of traverse
- 3/121    . . . . {By using mechanical means not provided for in G11B 3/14, G11B 3/20, e.g. using cams}
- 3/122    . . . . . {Providing horizontal force, e.g. anti-skating (G11B 3/124 takes precedence)}
- 3/124    . . . . . {Damping means therefor}
- 3/125    . . . . {by using electric or magnetic means}
- 3/127    . . . . . {Providing horizontal force, e.g. anti-skating force (G11B 3/128 takes precedence)}
- 3/128    . . . . . {Damping means therefor}
- 3/14     . . . . by using effects of gravity or inertia, e.g. counterweight (G11B 3/28 takes precedence)
- 3/145    . . . . . {Providing horizontal force, e.g. anti-skating force (G11B 3/18 takes precedence)}
- 3/16     . . . . . adjustable
- 3/18     . . . . . Damping by using viscosity effect
- 3/20     . . . . by elastic means, e.g. spring (G11B 3/28 takes precedence)
- 3/22     . . . . . adjustable
- 3/24     . . . . . acting to decrease pressure on record
- 3/26     . . . . . acting to increase pressure on record

- 3/28 . . . . providing transverse bias parallel to record
- NOTE**  
see provisionally also [G11B 3/14](#), [G11B 3/20](#) )
- 3/30 . . . Supporting in an inoperative position
- 3/31 . . . . Construction of arms {(for transmitting, directing or amplifying sound [G11B 3/003](#))}
- 3/32 . . . . Construction or arrangement of support pillars
- 3/34 . . . Driving or guiding during transducing operation
- 3/36 . . . . Automatic-feed mechanisms producing progressive transducing traverse across record carriers otherwise than by grooves, e.g. by lead-screw
- 3/38 . . . . Guiding, e.g. constructions or arrangements providing linear or other special tracking characteristics
- 3/40 . . . . Driving of heads relatively to stationary record carriers for transducing
- 3/42 . . . with provision for adaptation or interchange of heads
- 3/44 . Styli, e.g. sapphire, diamond
- 3/445 . . {Styli particularly adapted for sensing video discs}
- 3/46 . . Constructions or forms {; Dispositions or mountings}, e.g. attachment of point to shank {(attachment of stylus directly to transducer [H04R 1/16](#))}
- 3/48 . . . Needles
- 3/50 . . Anvils or other supports opposing stylus forces
- 3/52 . . Arrangements permitting styli to yield under excessive pressure
- 3/54 . . Storing; Manipulating, e.g. feeding styli to and from heads
- 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}
- 3/5809 . . {during transducing operation}
- 3/5818 . . . {for record carriers}
- 3/5827 . . . . {using means contacting the record carrier}
- 3/5836 . . . . . {means connected to the pick-up arm or head}
- 3/5845 . . . . . {means connected to a separate arm}
- 3/5854 . . . . . {using means not contacting the record carrier}
- 3/5863 . . . . . {connected to the pick-up arm or head}
- 3/5872 . . . . . {connected to a separate arm}
- 3/5881 . . . {for styli or needles only}
- 3/589 . . {before or after transducing operation}
- 3/60 . Turntables for record carriers
- 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
- 3/702 . . . {for video discs with grooves ([G11B 3/705](#) takes precedence)}
- 3/705 . . . {characterised by the selection of the material only}
- 3/707 . . . . {for video discs with grooves}
- 3/72 . . Groove formations, e.g. run-in groove, run-out groove
- 3/74 . . . Multiple output tracks, e.g. binaural stereophonic
- 3/76 . . . forming part of cinematograph films
- 3/78 . . Multiple-track arrangements
- 3/80 . . incorporating subsidiary guide means for heads, other than modulated grooves; Part-formed unmodulated grooves for conversion into transducing grooves
- 3/90 . . with means indicating prior or unauthorised use
- 5/00 Recording by magnetisation or demagnetisation of a record carrier; Reproducing by magnetic means; Record carriers therefor ([G11B 11/00](#) {and [G11B 13/00](#)} take precedence)**
- NOTE**  
Subgroups [G11B 5/02](#) - [G11B 5/86](#) take precedence over subgroups [G11B 5/004](#) - [G11B 5/016](#)
- 2005/0002 . . {Special dispositions or recording techniques}
- 2005/0005 . . . {Arrangements, methods or circuits}
- 2005/0008 . . . . {Magnetic 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 19/00](#) takes precedence)
- 5/008 . . . Recording on, or reproducing or erasing from, magnetic tapes, {sheets, e.g. cards,} or wires ([G11B 15/00](#) {[G11B 19/00](#)} take precedence; {bulk transferring of information magnetisation for re-recording [G11B 5/865](#); marking record carriers in digital fashion [G06K](#)})
- 5/00804 . . . {magnetic sheets (rotating sheets [G11B 5/012](#))}
- 5/00808 . . . {magnetic cards}
- 5/00813 . . . {magnetic tapes}
- 5/00817 . . . {on longitudinal tracks only, e.g. for serpentine format recording}
- 5/00821 . . . . {using stationary heads}
- 5/00826 . . . . . {comprising a plurality of single poles or gaps or groups thereof operative at the same time}
- 5/0083 . . . . . {for parallel information processing, e.g. PCM recording}
- 5/00834 . . . . . {using virtual scanning heads}
- 5/00839 . . . . . {using cyclically driven heads providing segmented tracks}
- 2005/00843 . . . . . {allowing digital compact cassette [DCC] format recording}
- 5/00847 . . . {on transverse tracks ([G11B 5/00878](#) takes precedence)}
- 5/00852 . . . . . {using stationary heads}
- 5/00856 . . . . . {comprising a plurality of single poles or gaps or groups thereof operative in time sequence}
- 5/0086 . . . . . {using cyclically driven heads providing segmented tracks}
- 5/00865 . . . . . {for transducing on more than one segment simultaneously}
- 5/00869 . . . . . {the segments being disposed in different lateral zones of the tape}
- 5/00873 . . . . . {the segments being disposed in different longitudinal zones of the tape}
- 5/00878 . . . {transducing different track configurations or formats on the same tape}
- 5/00882 . . . . {configurations only, e.g. longitudinal and transverse}
- 5/00886 . . . . . {simultaneously}
- 5/00891 . . . . . {formats only, e.g. analog and digital}
- 5/00895 . . . . . {simultaneously}
- 5/012 . . . 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
- 5/022 . . . {H-Bridge head driver circuit, the "H" configuration allowing to inverse the current direction in the head}
- 5/024 . . . Erasing
- 5/0245 . . . {Bulk erasing}
- 5/027 . . . Analogue recording
- 5/0275 . . . . {Boundary displacement recording}
- 5/03 . . . . Biasing
- 5/035 . . . . Equalising
- 5/09 . . . Digital recording
- 5/10 . . . Structure or manufacture of housings or shields for heads
- 5/102 . . . {Manufacture of housing}
- 5/105 . . . Mounting of head within housing {or assembling of head and housing ([G11B 5/3103](#) takes precedence)}
- 5/11 . . . Shielding of head against electric or magnetic fields
- 5/112 . . . . {Manufacture of shielding device}
- 5/115 . . . . Shielding devices arranged between heads or windings ({[G11B 5/265](#)}, [G11B 5/29](#) take precedence)
- 5/127 . . . Structure or manufacture of heads, e.g. inductive
- 5/1272 . . . {Assembling or shaping of elements ([G11B 5/1278](#) takes precedence)}
- 5/1274 . . . {with "composite" cores, i.e. cores composed in some parts of magnetic particles and in some other parts of magnetic metal layers}
- 5/1276 . . . . {including at least one magnetic thin film}
- 5/1278 . . . {specially adapted for magnetisations perpendicular to the surface of the record carrier}
- 5/133 . . . with cores composed of particles, e.g. with dust cores, with ferrite cores {with cores composed of isolated magnetic particles ([in thin films \[G11B 5/31\]\(#\)](#))}
- 5/1335 . . . . {Assembling or shaping of elements}
- 5/147 . . . with cores being composed of metal sheets, i.e. laminated cores {with cores composed of isolated magnetic layers, e.g. sheets ([in thin films \[G11B 5/31\]\(#\)](#))}
- 5/1475 . . . . {Assembling or shaping of elements ([G11B 5/153](#) takes precedence)}
- 5/153 . . . . with tape-wound cores
- 5/17 . . . Construction or disposition of windings
- 5/187 . . . Structure or manufacture of the surface of the head in physical contact with, or immediately adjacent to the recording medium; Pole pieces; Gap features ([G11B 5/265](#), {[G11B 5/29](#)}, [G11B 5/31](#) take precedence)
- 5/1871 . . . . {Shaping or contouring of the transducing or guiding surface}
- 5/1872 . . . . . {for improving the form of the electrical signal transduced, e.g. compensation of "contour effect"}
- 5/1874 . . . . . {specially adapted for composite pole pieces, e.g. for avoiding "pseudo-gap"}
- 5/1875 . . . . {"Composite" pole pieces, i.e. poles composed in some parts of magnetic particles and in some other parts of magnetic metal layers}
- 5/1877 . . . . . {including at least one magnetic thin film}
- 5/1878 . . . . . {disposed immediately adjacent to the transducing gap, e.g. "Metal-In-Gap" structure}
- 5/193 . . . . the pole pieces being ferrite {or other magnetic particles ([G11B 5/1871](#) takes precedence; [in thin film \[G11B 5/31\]\(#\)](#))}
- 5/21 . . . . the pole pieces being of ferrous sheet metal {or other magnetic layers ([G11B 5/1871](#) takes precedence; [in thin film \[G11B 5/31\]\(#\)](#))}

- 5/23 . . . Gap features {(G11B 5/1871, G11B 5/1875, G11B 5/265, G11B 5/29, G11B 5/488 and subgroups, G11B 5/4907 and subgroups, G11B 5/4969 and subgroups take precedence)}
- 5/232 . . . . {Manufacture of gap}
- 5/235 . . . . Selection of material for gap filler {(G11B 5/232 takes precedence)}
- 5/245 . . . comprising means for controlling the reluctance of the magnetic circuit {in a head with single gap, for co-operation with one track} (G11B 5/255 takes precedence)
- 5/2452 . . . . {where the dimensions of the effective gap are controlled}
- 5/2455 . . . . {the magnetic circuit including at least one magnetic thin film of controllable properties (for scanning G11B 5/4938)}
- 5/2457 . . . . . {disposed immediately adjacent to the gap ("composite" pole pieces G11B 5/1877)}
- 5/255 . . . comprising means for protection against wear {(in thin film structures G11B 5/3106)}
- 5/265 . . Structure or manufacture of a head with more than one gap for erasing, recording or reproducing on the same track (G11B 5/33 takes precedence {in thin film structures G11B 5/31})
- 5/2651 . . . {Manufacture}
- 5/2652 . . . {with more than one gap simultaneously operative (with controlled single gap G11B 5/245)}
- 5/2654 . . . . {for recording or erasing}
- 5/2655 . . . . {with all the gaps disposed within the track or "guard band" between tracks, e.g. with erase gaps operative on track edges, with wide erase gap followed by narrow write gap}
- 5/2657 . . . . . {all the gaps having the same dimension in the direction transverse to the track direction}
- 5/2658 . . . . . {for recording with premagnetization or biasing of record carrier or head}
- 5/29 . . Structure or manufacture of unitary devices formed of plural heads for more than one track {(G11B 5/33, G11B 5/49 and subgroups take precedence; in thin film structure G11B 5/31)}
- 5/295 . . . {Manufacture}
- 5/31 . . using thin films {(G11B 5/1274, G11B 5/1278, G11B 5/1874, G11B 5/1875, G11B 5/33, G11B 5/49 take precedence; magnetic thin film structures H01F 10/00)}
- 5/3103 . . . {Structure or manufacture of integrated heads or heads mechanically assembled and electrically connected to a support or housing}
- 5/3106 . . . . {where the integrated or assembled structure comprises means for conditioning against physical detrimental influence, e.g. wear, contamination (G11B 5/3133 takes precedence)}
- 5/3109 . . . {Details (G11B 5/3103 takes precedence)}
- 5/3113 . . . . {for improving the magnetic domain structure or avoiding the formation or displacement of undesirable magnetic domains}
- 5/3116 . . . . {Shaping of layers, poles or gaps for improving the form of the electrical signal transduced, e.g. for shielding, contour effect, equalizing, side flux fringing, cross talk reduction between heads or between heads and information tracks (G11B 5/3113, G11B 5/245 take precedence)}
- 5/312 . . . . {for reducing flux leakage between the electrical coil layers and the magnetic cores or poles or between the magnetic cores or poles}
- 5/3123 . . . . . {by using special coil configurations or conductors}
- 5/3126 . . . . . {using superconductors}
- 5/313 . . . . {Disposition of layers}
- 5/3133 . . . . . {including layers not usually being a part of the electromagnetic transducer structure and providing additional features, e.g. for improving heat radiation, reduction of power dissipation, adaptations for measurement or indication of gap depth or other properties of the structure (G11B 5/3106 takes precedence)}
- 5/3136 . . . . . {for reducing the pole-tip-protrusion at the head transducing surface, e.g. caused by thermal expansion of dissimilar materials}
- 5/314 . . . . . {where the layers are extra layers normally not provided in the transducing structure, e.g. optical layers (G11B 5/3196 takes precedence)}
- 5/3143 . . . . . {including additional layers for improving the electromagnetic transducing properties of the basic structure, e.g. for flux coupling, guiding or shielding (G11B 5/3116, G11B 5/312 take precedence)}
- 5/3146 . . . . . {magnetic layers}
- 5/315 . . . . . {Shield layers on both sides of the main pole, e.g. in perpendicular magnetic heads}
- 5/3153 . . . . . {including at least one magnetic thin film coupled by interfacing to the basic magnetic thin film structure}
- 5/3156 . . . . . {providing interaction by induced or exchange coupling}
- 5/3159 . . . . . {superconductive layers}
- 5/3163 . . . {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}
- 5/3166 . . . . {Testing or indicating in relation thereto, e.g. before the fabrication is completed}
- 5/3169 . . . . {Working or finishing the interfacing surface of heads, e.g. lapping of heads}
- 5/3173 . . . . {Batch fabrication, i.e. producing a plurality of head structures in one batch}

- 5/3176 . . . {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)}
- 5/3179 . . . . {the films being mainly disposed in parallel planes}
- 5/3183 . . . . {intersecting the gap plane, e.g. "horizontal head structure"}
- 5/3186 . . . . {parallel to the gap plane, e.g. "vertical head structure"}
- 5/3189 . . . {Testing}
- 5/3193 . . . . {of films or layers, e.g. continuity test}
- 5/3196 . . . . {of thin magnetic films, e.g. functional testing of the transducing properties ([G11B 5/455](#) takes precedence)}
- 5/325 . . Erasing heads using permanent magnets ([general details thereof G11B 5/133 - G11B 5/255](#))
- 5/33 . . 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 thereof G11B 5/133 - G11B 5/255](#))
- 5/332 . . . {using thin films ([G11B 5/372](#), [G11B 5/3903](#) take precedence)}
- 5/335 . . . with saturated jig, e.g. for detecting second harmonic; balanced flux head
- 5/35 . . . having vibrating elements
- 5/37 . . . using galvano-magnetic devices, e.g. Hall-effect devices ([G11B 5/39](#) takes precedence){using Hall or Hall-related effect, e.g. planar-Hall effect or pseudo-Hall effect}
- 5/372 . . . . {in magnetic thin films}
- 5/374 . . . . {Integrated structures}
- 5/376 . . . . {in semi-conductors ([G11B 5/372](#) takes precedence)}
- 5/378 . . . . {Integrated structures}
- 5/39 . . . using magneto-resistive devices {or effects}
- 5/3903 . . . . {using magnetic thin film layers or their effects, the films being part of integrated structures}
- 5/3906 . . . . {Details related to the use of magnetic thin film layers or to their effects}
- 5/3909 . . . . {Arrangements using a magnetic tunnel junction}
- 5/3912 . . . . {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)}
- 5/3916 . . . . {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}
- 5/3919 . . . . {the guide being interposed in the flux path}
- 5/3922 . . . . {the read-out elements being disposed in magnetic shunt relative to at least two parts of the flux guide structure}
- 5/3925 . . . . . . . . . . {the two parts being thin films}
- 5/3929 . . . . . . . . . . {Disposition of magnetic thin films not used for directly coupling magnetic flux from the track to the MR film or for shielding}
- 5/3932 . . . . . . . . . . {Magnetic biasing films}
- 5/3935 . . . . . . . . . . {Flux closure films not being part of the track flux guides}
- 5/3938 . . . . . . . . . . {the flux closure films being used for absorbing or reducing demagnetising or saturating fields}
- 5/3941 . . . . . . . . . . {the flux closure films being used for providing a closed magnetic circuit to the MR film}
- 5/3945 . . . . . . . . . . {Heads comprising more than one sensitive element}
- 5/3948 . . . . . . . . . . {the sensitive elements being active read-out elements}
- 5/3951 . . . . . . . . . . {the active elements being arranged on several parallel planes}
- 5/3954 . . . . . . . . . . {the active elements transducing on a single track}
- 5/3958 . . . . . . . . . . {the active elements being arranged in a single plane, e.g. "matrix" disposition}
- 5/3961 . . . . . . . . . . {disposed at an angle to the direction of the track or relative movement}
- 5/3964 . . . . . . . . . . {for transducing on a single track}
- 5/3967 . . . . . . . . . . {Composite structural arrangements of transducers, e.g. inductive write and magnetoresistive read ([G11B 5/3906](#) takes precedence)}
- 5/397 . . . . . . . . . . {with a plurality of independent magnetoresistive active read-out elements for respectively transducing from selected components}
- 5/3974 . . . . . . . . . . {from the same information track, e.g. frequency bands}
- 5/3977 . . . . . . . . . . {from different information tracks}
- 5/398 . . . . . . . . . . {Specially shaped layers}
- 5/3983 . . . . . . . . . . {with current confined paths in the spacer layer}
- 5/3987 . . . . . . . . . . {with provision for closing the magnetic flux during operation}
- 5/399 . . . . . . . . . . {with intrinsic biasing, e.g. provided by equipotential strips}
- 5/3993 . . . . . . . . . . {in semi-conductors}
- 2005/3996 . . . . . . . . . . {large or giant magnetoresistive effects [GMR], e.g. as generated in spin-valve [SV] devices}
- 5/40 . . Protective measures on heads, e.g. against excessive temperature ([G11B 5/31](#) takes precedence; protection against wear [G11B 5/255](#) {; protective structure of the head: [see under structures, e.g. G11B 5/3106](#))}
- 5/41 . . Cleaning of heads {([of record carriers G11B 23/50](#))}
- 5/455 . . Arrangements for functional testing of heads; Measuring arrangements for heads
- 5/4555 . . {by using a spin-stand, i.e. a spinning disc or simulator}

- 5/465 . Arrangements for demagnetisation of heads
- 5/48 . 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](#))}
- 5/4806 . . {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)}
- 5/4813 . . . {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)}
- 5/4826 . . . {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](#))}
- 5/483 . . . . {Piezoelectric devices between head and arm, e.g. for fine adjustment}
- 5/4833 . . . {Structure of the arm assembly, e.g. load beams, flexures, parts of the arm adapted for controlling vertical force on the head ([G11B 5/484](#) takes precedence)}
- 5/484 . . . {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}
- 5/4846 . . . {Constructional details of the electrical connection between arm and support}
- 5/4853 . . . {Constructional details of the electrical connection between head and arm}
- 5/486 . . . {with provision for mounting or arranging electrical conducting means or circuits on or along the arm assembly}
- 5/4866 . . . {the arm comprising an optical waveguide, e.g. for thermally-assisted recording}
- 5/4873 . . . {the arm comprising piezoelectric or other actuators for adjustment of the arm}
- 5/488 . . {Disposition of heads ([G11B 5/49](#), [G11B 5/52](#) take precedence)}
- 5/4886 . . . {relative to rotating disc}
- 5/4893 . . . {relative to moving tape}
- 5/49 . . Fixed mounting {or arrangements, e.g. one head per track}
- 5/4907 . . . {Details for scanning ([G11B 5/4969](#) takes precedence)}
- 5/4915 . . . . {Structure of specially adapted heads ([G11B 5/3906](#) takes precedence)}
- 5/4923 . . . . {in which zones of the transducing part are being physically controllable}
- 5/493 . . . . . {Control of magnetic properties, e.g. saturation, anisotropy}
- 5/4938 . . . . . {of thin magnetic films}
- 5/4946 . . . . . . {for formation or displacement of magnetic domains, e.g. walls, bubbles}
- 5/4953 . . . . . {part of the structure being mechanically or magnetically coupled to or decoupled from, the transducing part}
- 5/4961 . . . . . {Circuits}
- 5/4969 . . . . {Details for track selection or addressing}
- 5/4976 . . . . . {Disposition of heads, e.g. matrix arrangement}
- 5/4984 . . . . . {Structure of specially adapted switching heads ([G11B 5/3958](#) takes precedence)}
- 5/4992 . . . . . {Circuits}
- 5/50 . . Interchangeable mountings, e.g. for replacement of head without readjustment
- 5/52 . . with simultaneous movement of head and record carrier, e.g. rotation of head ([G11B 5/588](#) takes precedence)}
- 5/53 . . . Disposition or mounting of heads on rotating support
- 5/531 . . . . . {Disposition of more than one recording or reproducing head on support rotating cyclically around an axis}
- 5/532 . . . . . {Parallel to the direction of movement of the tape, e.g. for transversal scanning}
- 5/534 . . . . . {inclined relative to the direction of movement of the tape, e.g. for helicoidal scanning}
- 5/535 . . . . . {perpendicular to the direction of movement of the tape, e.g. for longitudinal scanning}
- 5/537 . . . . . . {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
- 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 5/5556](#) takes precedence)}
- 5/5552 . . . . . {using fine positioning means for track acquisition separate from the coarse (e.g. track changing) positioning means}
- 5/5556 . . . . . {with track following after a "seek"}
- 5/556 . . . . . {control circuits therefor}
- 5/5565 . . . . . {system adaptation for compensation of variations of physical parameters, e.g. temperature}
- 5/5569 . . . . . {details of specially adapted mobile parts, e.g. electromechanical control devices ([motors in general H02K](#))}
- 5/5573 . . . . . {Details of the magnetic circuit, e.g. of actuators}
- 5/5578 . . . . . {Multiple actuators addressing the same disk, e.g. to improve data rate or access rate}
- 5/5582 . . . . . {system adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock}
- 5/5586 . . . . . {Minimising seek noise, e.g. actuator noise}
- 5/5591 . . . . . {across drum tracks}
- 5/5595 . . . . . {Control circuits therefor}
- 5/56 . . . . . with provision for moving the head {support} for the purpose of adjusting the position of the head relative to the record carrier, e.g. manual adjustment for azimuth correction or track centering ([G11B 5/52](#), [G11B 5/54](#), [G11B 5/58](#) take precedence)
- 5/58 . . . . . with provision for moving the head for the purpose of maintaining alignment of the head relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following ({[spacing means incorporated in the head structure G11B 5/187](#), [G11B 5/255](#), [G11B 5/3106](#))}
- 5/581 . . . . . {maintaining desired contact or spacing by direct interaction of forces generated between heads or supports thereof and record carriers or supports thereof, e.g. attraction-repulsion interactions}
- 5/582 . . . . . {interactions in a magnetic field}
- 5/583 . . . . . {using repulsion generated by superconductors in a magnetic field, e.g. by "Meissner effect"}
- 5/584 . . . . . for track following on tapes
- 5/588 . . . . . by controlling the position of the rotating heads (by [controlling the speed of the record carrier G11B 15/467](#); by [controlling speed of the heads G11B 15/473](#); by [moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement G11B 15/1841](#))}
- 5/592 . . . . . using bimorph elements supporting the heads ({[see provisional 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 . . . . . for track following on disks ({[G11B 5/5526](#), [G11B 5/5552](#), [G11B 5/5565](#), [G11B 5/5582](#) take precedence})
- NOTE**
- For groups [G11B 5/59605](#) - [G11B 5/59633](#), see provisionally [G11B 5/5521](#) and [G11B 5/596](#)
- 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)}
- 5/59633 . . . . . {Servo formatting ([G11B 5/59627](#), [G11B 5/59677](#), [G11B 5/59683](#), [G11B 5/59688](#) take precedence)}
- 5/59638 . . . . . {Servo formatting apparatuses, e.g. servo-writers}
- 5/59644 . . . . . {Acquisition or selection of servo format from a system reference (after track seek [G11B 5/5556](#))}
- 5/5965 . . . . . {Embedded servo format ([G11B 5/59655](#) takes precedence)}
- 5/59655 . . . . . {Sector, sample or burst servo format}
- 5/59661 . . . . . {Spiral servo format}
- 5/59666 . . . . . {Self servo writing}
- 5/59672 . . . . . {Servo re-writing, e.g. for the correction of offsets or 'fading' of servo marks}
- 5/59677 . . . . . {with optical servo tracking}
- 5/59683 . . . . . {for magnetoresistive heads}
- 5/59688 . . . . . {Servo signal format patterns or signal processing thereof, e.g. dual, tri, quad, burst signal patterns}
- 5/59694 . . . . . {System adaptation for working during or after external perturbation, e.g. in the presence of a mechanical oscillation caused by a shock}
- 5/60 . . . . . Fluid-dynamic spacing of heads from record-carriers
- 5/6005 . . . . . {Specially adapted for spacing from a rotating disc using a fluid cushion}
- 5/6011 . . . . . {Control of flying height}
- 5/6017 . . . . . {using capacitive measurement}
- 5/6023 . . . . . {using inductive measurement}
- 5/6029 . . . . . {Measurement using values derived from the data signal read from the disk}
- 5/6035 . . . . . {using electrostatic forces}



- 5/6041 . . . . . {using magnetic forces}
- 5/6047 . . . . . {using magnetostrictive means}
- 5/6052 . . . . . {using optical means}
- 5/6058 . . . . . {using piezoelectric means}
- 5/6064 . . . . . {using air pressure}
- 5/607 . . . . . {using thermal means}
- 5/6076 . . . . . {Detecting head-disk contact}
- 5/6082 . . . . . {Design of the air bearing surface}
- 5/6088 . . . . . {Optical waveguide in or on flying head}
- 5/6094 . . . . . {Preventing or discharging electrostatic charge build-up on the flying head}
- 5/62 . . . . . Record carriers characterised by the selection of the material

**NOTE**

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

- 5/627 . . . . . of leaders for magnetic tapes, e.g. non-magnetic strips on the tapes or for connection
- 5/633 . . . . . of cinematographic films or slides with integral magnetic track
- 5/64 . . . . . comprising only the magnetic material without bonding agent

**WARNING**

Group [G11B 5/64](#) is impacted by reclassification into groups [G11B 5/657](#) - [G11B 5/658](#) and [G11B 5/672](#) - [G11B 5/678](#).

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

- 5/642 . . . . . {self supporting magnetic material, e.g. magnetisable wires}
- 5/65 . . . . . characterised by its composition ([G11B 5/66](#) takes precedence)

**WARNING**

Group [G11B 5/65](#) is impacted by reclassification into groups [G11B 5/657](#) - [G11B 5/658](#).

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

- 5/653 . . . . . {containing Fe or Ni (containing Co [G11B 5/656](#); containing inorganic, non-oxide compounds of Si, N, P, B, H or C [G11B 5/657](#); containing oxygen [G11B 5/658](#))}

**WARNING**

Group [G11B 5/653](#) is impacted by reclassification into groups [G11B 5/657](#) - [G11B 5/658](#).

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

- 5/656 . . . . . {containing Co (containing inorganic, non-oxide compounds of Si, N, P, B, H or C [G11B 5/657](#); containing oxygen [G11B 5/658](#))}

**WARNING**

Group [G11B 5/656](#) is impacted by reclassification into groups [G11B 5/657](#) - [G11B 5/658](#).

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

- 5/657 . . . . . {containing inorganic, non-oxide compound of Si, N, P, B, H or C, e.g. in metal alloy or compound (containing oxygen [G11B 5/658](#))}

**WARNING**

Group [G11B 5/657](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/65](#) - [G11B 5/656](#).

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

- 5/658 . . . . . {containing oxygen, e.g. molecular oxygen or magnetic oxide}

**WARNING**

Group [G11B 5/658](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/65](#) - [G11B 5/656](#).

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

- 5/66 . . . . . the record carriers consisting of several layers

**WARNING**

Group [G11B 5/66](#) is impacted by reclassification into groups [G11B 5/672](#) - [G11B 5/678](#).

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

- 5/667 . . . . . including a soft magnetic layer

**WARNING**

Group [G11B 5/667](#) is impacted by reclassification into groups [G11B 5/672](#) - [G11B 5/678](#).

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

- 5/672 . . . . {having different compositions in a plurality of magnetic layers, e.g. layer compositions having differing elemental components or differing proportions of elements}
- WARNING**
- Group [G11B 5/672](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/66 - G11B 5/667](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/674 . . . . {having differing macroscopic or microscopic structures, e.g. differing crystalline lattices, varying atomic structures or differing roughnesses}
- WARNING**
- Group [G11B 5/674](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/66 - G11B 5/667](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/676 . . . . {having magnetic layers separated by a nonmagnetic layer, e.g. antiferromagnetic layer, Cu layer or coupling layer}
- WARNING**
- Group [G11B 5/676](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/66 - G11B 5/667](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/678 . . . . . {having three or more magnetic layers}
- WARNING**
- Group [G11B 5/678](#) is incomplete pending reclassification of documents from groups [G11B 5/64](#) and [G11B 5/66 - G11B 5/667](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/68 . . comprising one or more layers of magnetisable material homogeneously mixed with a bonding agent
- 5/70 . . . on a base layer
- 5/7013 . . . . {characterised by the dispersing agent}
- 5/702 . . . . characterised by the bonding agent
- 5/7021 . . . . . {containing a polyurethane or a polyisocyanate}
- 5/7022 . . . . . {containing mixtures of polyurethanes or polyisocyanates with other polymers}
- 5/7023 . . . . . {containing polyesters, polyethers, silicones, polyvinyl resins, polyacrylresins or epoxy resins ([G11B 5/7022](#) takes precedence)}
- 5/7025 . . . . . {containing cellulosic derivatives ([G11B 5/7022](#) takes precedence)}
- 5/7026 . . . . . {Radiation curable polymers}
- 5/7027 . . . . . {Graft polymers}
- 5/7028 . . . . . {Additives, e.g. crosslinking agents}
- 5/706 . . . . characterised by the composition of the magnetic material
- 5/70605 . . . . . {metals or alloys}
- 5/7061 . . . . . {with a non-magnetic core}
- 5/70615 . . . . . {containing Fe metal or alloys ([G11B 5/70621](#) takes precedence)}
- 5/70621 . . . . . {containing Co metal or alloys}
- 5/70626 . . . . . {containing non-metallic substances}
- 5/70631 . . . . . {with a non-magnetic core}
- 5/70636 . . . . . {CrO<sub>2</sub>}
- 5/70642 . . . . . {iron oxides}
- 5/70647 . . . . . {with a skin ([G11B 5/70657](#) takes precedence)}
- 5/70652 . . . . . {gamma - Fe<sub>2</sub> O<sub>3</sub>}
- 5/70657 . . . . . {with a skin}
- 5/70663 . . . . . {Preparation processes specially adapted therefor, e.g. using stabilising agents ([G11B 5/70668](#) and [G11B 5/70673](#) take precedence)}
- 5/70668 . . . . . {containing a dopant}
- 5/70673 . . . . . {containing Co}
- 5/70678 . . . . . {Ferrites}
- 5/70684 . . . . . {Ferro-ferrioxides}
- 5/70689 . . . . . {Magnetite}
- 5/70694 . . . . . {Non-stoichiometric ferro-ferrioxides, e.g. berthollide}
- 5/708 . . . . characterised by addition of non-magnetic particles to the layer
- 5/7085 . . . . . {non-magnetic abrasive particles}
- 5/71 . . . . characterised by the lubricant
- 5/712 . . . . characterised by the surface treatment or coating of magnetic particles
- 5/714 . . . . characterised by the dimension of the magnetic particles
- 5/716 . . . . characterised by two or more magnetic layers
- 5/718 . . . . . at least one on each side of the base layer
- 5/72 . . Protective coatings, e.g. anti-static {or antifriction}
- 5/722 . . . {containing an anticorrosive material}
- 5/725 . . . containing a lubricant {, e.g. organic compounds ([inorganic carbon protective coating G11B 5/727](#))}
- 5/7253 . . . . {Fluorocarbon lubricant}
- 5/7257 . . . . . {Perfluoropolyether lubricant}
- 5/726 . . . {Two or more protective coatings ([inorganic carbon protective coating G11B 5/727](#))}
- 5/7262 . . . . {Inorganic protective coating}
- 5/7264 . . . . . {Inorganic carbon protective coating, e.g. graphite, diamond like carbon or doped carbon}
- 5/7266 . . . . . {comprising a lubricant over the inorganic carbon coating}
- 5/7268 . . . . . {comprising elemental nitrogen in the inorganic carbon coating}
- 5/727 . . . {Inorganic carbon protective coating, e.g. graphite, diamond like carbon or doped carbon}
- 5/728 . . . {containing a bonding agent in the protective coating}

- 5/73 . . . Base layers {, i.e. all non-magnetic layers lying under a lowermost magnetic recording layer, e.g. including any non-magnetic layer in between a first magnetic recording layer and either an underlying substrate or a soft magnetic underlayer}
- 5/733 . . . 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](#)).}
- 5/7334 . . . . {Base layer characterised by composition or structure}
- 5/735 . . . characterised by the back layer {(magnetic recording media substrates [G11B 5/739](#))}
- 5/7353 . . . . {for a thin film medium where the magnetic recording layer structure has no bonding agent}
- 5/7356 . . . . {comprising non-magnetic particles in the back layer, e.g. particles of TiO<sub>2</sub>, ZnO or SiO<sub>2</sub>}
- 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](#))}
- 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](#))}
- 5/7369 . . . . {Two or more non-magnetic underlayers, e.g. seed layers or barrier layers}
- 5/737 . . . . . {Physical structure of underlayer, e.g. texture}
- 5/7371 . . . . {Non-magnetic single underlayer comprising nickel}
- 5/7373 . . . . {Non-magnetic single underlayer comprising chromium}
- 5/7375 . . . . {for heat-assisted or thermally-assisted magnetic recording [HAMR, TAMR]}
- 5/7377 . . . . {Physical structure of underlayer, e.g. texture}
- 5/7379 . . . . {Seed layer, e.g. at least one non-magnetic layer is specifically adapted as a seed or seeding layer}
- 5/739 . . . . {Magnetic recording media substrates}
- 5/73911 . . . . . {Inorganic substrates}
- 5/73913 . . . . . {Composites or coated substrates}
- 5/73915 . . . . . {Silicon compound based coating}
- 5/73917 . . . . . {Metallic substrates, i.e. elemental metal or metal alloy substrates}
- 5/73919 . . . . . {Aluminium or titanium elemental or alloy substrates}
- 5/73921 . . . . . {Glass or ceramic substrates}
- 5/73923 . . . . . {Organic polymer substrates}
- 5/73925 . . . . . {Composite or coated non-esterified substrates}
- 5/73927 . . . . . {Polyester substrates, e.g. polyethylene terephthalate}
- 5/73929 . . . . . {comprising naphthalene ring compounds, e.g. polyethylene naphthalate substrates}
- 5/73931 . . . . . {Two or more layers, at least one layer being polyester}
- 5/73933 . . . . . {Surface treated layers, e.g. treated by corona discharge}
- 5/73935 . . . . . {characterised by roughness or surface features, e.g. by added particles}
- 5/73937 . . . . . {Substrates having an organic polymer comprising a ring structure}
- 5/74 . . . Record carriers characterised by the form, e.g. sheet shaped to wrap around a drum
- 5/743 . . . {Patterned record carriers, wherein the magnetic recording layer is patterned into magnetic isolated data islands, e.g. discrete tracks}
- 5/746 . . . {Bit Patterned record carriers, wherein each magnetic isolated data island corresponds to a bit}
- 5/76 . . . Drum carriers
- 5/78 . . . Tape carriers
- 5/80 . . . Card carriers
- 5/82 . . . Disk carriers
- 5/825 . . . {flexible discs}
- 5/84 . . . Processes or apparatus specially adapted for manufacturing record carriers
- 5/8404 . . . {manufacturing base layers}
- 5/8408 . . . {protecting the magnetic layer}
- 5/8412 . . . {treatment by ultrasonics}
- 5/8416 . . . {coating a support with a magnetic layer by precipitation}
- 5/842 . . . Coating a support with a liquid magnetic dispersion
- 5/845 . . . . in a magnetic field
- 5/848 . . . Coating a support with a magnetic layer by extrusion
- 5/85 . . . Coating a support with a magnetic layer by vapour deposition

- 5/851 . . Coating a support with a magnetic layer by sputtering
- 5/852 . . Orientation in a magnetic field ([G11B 5/845 takes precedence](#))
- 5/855 . . Coating only part of a support with a magnetic layer
- 5/858 . . Producing a magnetic layer by electro-plating or electroless plating
- 5/86 . . 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](#))}
- 5/865 . . {by contact "printing"}
- 7/00 Recording or reproducing by optical means, e.g. recording using a thermal beam of optical radiation {by modifying optical properties or the physical structure}, reproducing using an optical beam at lower power {by sensing optical properties}; Record carriers therefor ([G11B 11/00](#), [G11B 13/00 take precedence](#))**
- 2007/0003 . . {Recording, reproducing or erasing systems characterised by the structure or type of the carrier}
- 2007/0006 . . {adapted for scanning different types of carrier, e.g. CD & DVD}
- 2007/0009 . . {for carriers having data stored in three dimensions, e.g. volume storage}
- 2007/0013 . . . {for carriers having multiple discrete layers}
- 2007/0016 . . {for carriers adapted to have label information written on the non-data side by the optical head used for data recording, e.g. lightscribe, labelflash}
- 7/002 . . Recording, reproducing or erasing systems characterised by the shape {or form} of the carrier
- 7/0025 . . with cylinders or cylinder-like carriers {or cylindrical sections or flat carriers loaded onto a cylindrical surface}, e.g. truncated cones
- 7/003 . . with webs {, filaments or wires}, e.g. belts, spooled tapes or films of quasi-infinite extent
- 7/0031 . . . {using a rotating head, e.g. helicoidal recording}
- 7/0032 . . . {for moving-picture soundtracks, i.e. cinema (cameras or projectors with sound recording or reproducing means [G03B 31/02](#))}
- 7/0033 . . with cards {or other card-like flat carriers, e.g. flat sheets of optical film}
- 7/0037 . . with discs
- 7/00375 . . . {arrangements for detection of physical defects, e.g. of recording layer}
- 7/004 . . Recording, reproducing or erasing methods; Read, write or erase circuits therefor {(magneto-optical systems [G11B 11/105](#))}
- 7/0045 . . Recording ([G11B 7/006](#), [G11B 7/0065 take precedence](#))
- 7/00451 . . . {involving ablation of the recording layer}
- 7/00452 . . . {involving bubble or bump forming}
- 7/00453 . . . {involving spectral or photochemical hole burning}
- 7/00454 . . . {involving phase-change effects}
- 7/00455 . . . {involving reflectivity, absorption or colour changes}
- 7/00456 . . . {Recording strategies, e.g. pulse sequences ([G11B 7/0062 takes precedence](#))}
- 2007/00457 . . . {Two photon recording}
- 7/00458 . . . {Verification, i.e. checking data during or after recording}
- 7/005 . . Reproducing ([G11B 7/0065 takes precedence](#))
- 7/0051 . . . {involving phase depth effects}
- 7/0052 . . . {involving reflectivity, absorption or colour changes}
- 7/0053 . . . {Reproducing non-user data, e.g. wobbled address, prepits, BCA}
- 7/0055 . . Erasing ([G11B 7/006](#), [G11B 7/0065 take precedence](#))
- 7/00552 . . . {involving colour change media}
- 7/00555 . . . {involving liquid crystal media}
- 7/00557 . . . {involving phase-change media}
- 7/006 . . Overwriting ([G11B 7/0065 takes precedence](#))
- 7/0062 . . . {Overwriting strategies, e.g. recording pulse sequences with erasing level used for phase-change media}
- 7/0065 . . Recording, reproducing or erasing by using optical interference patterns, e.g. holograms
- 2007/00653 . . . {Collinear holography}
- 2007/00656 . . . {Counterpropagating holography}
- 7/007 . . Arrangement of the information on the record carrier, e.g. form of tracks {, actual track shape, e.g. wobbled, or cross-section, e.g. v-shaped; Sequential information structures, e.g. sectoring or header formats within a track}
- 2007/00709 . . {Dimensions of grooves or tracks, e.g. groove depth, track pitch}
- 7/00718 . . {Groove and land recording, i.e. user data recorded both in the grooves and on the lands}
- 2007/00727 . . {where the information is modified to form a visible pattern, e.g. forming a label by modifying the width of pits or grooves}
- 7/00736 . . {Auxiliary data, e.g. lead-in, lead-out, Power Calibration Area [PCA], Burst Cutting Area [BCA], control information (sector headers or addresses in prepits [G11B 7/00745](#); 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, prepits}
- 2007/0136 . . . {where each location can have more than two values ('multivalue'), for data or prepits}
- 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}
- 7/08505 . . . {Methods for track change, selection or preliminary positioning by moving the head}
- 7/08511 . . . . {with focus pull-in only}
- 7/08517 . . . . {with tracking pull-in only}
- 7/08523 . . . . {with both tracking and focusing pull-in}
- 7/08529 . . . . {Methods and circuits to control the velocity of the head as it traverses the tracks}
- 7/08535 . . . . . {to maintain constant velocity during the traverse}
- 7/08541 . . . . {involving track counting to determine position}
- 7/08547 . . . {Arrangements for positioning the light beam only without moving the head, e.g. using static electro-optical elements}
- 7/08552 . . . . {using electro-optical elements}
- 7/08558 . . . . {using acousto-optical elements}
- 7/08564 . . . . {using galvanomirrors}
- 7/0857 . . . {Arrangements for mechanically moving the whole head}
- 7/08576 . . . . {Swinging-arm positioners}
- 7/08582 . . . . {Sled-type positioners}
- 7/08588 . . . . . {with position sensing by means of an auxiliary system using an external scale}
- 7/08594 . . . . {to access both sides of the disc with the same head assembly}
- 7/09 . . with provision for moving the light beam or focus plane for the purpose of maintaining alignment of the light beam relative to the record carrier during transducing operation, e.g. to compensate for surface irregularities of the latter or for track following
- 7/0901 . . . {for track following only ([G11B 7/0925](#), [G11B 7/094](#), [G11B 7/0941](#), [G11B 7/0943](#), [G11B 7/0945](#), [G11B 7/0946](#), [G11B 7/0948](#) take precedence)}
- 7/0903 . . . . {Multi-beam tracking systems}
- 7/0904 . . . . {Dithered tracking systems}
- 7/0906 . . . . {Differential phase difference systems}
- 7/0908 . . . {for focusing only ([G11B 7/0925](#), [G11B 7/094](#), [G11B 7/0941](#), [G11B 7/0943](#), [G11B 7/0945](#), [G11B 7/0946](#), [G11B 7/0948](#) take precedence)}
- 7/0909 . . . . {by astigmatic methods}
- 7/0911 . . . . {by far-field method}
- 7/0912 . . . . {by push-pull method}
- 7/0914 . . . . {by non-optical methods, e.g. capacitive}
- 7/0916 . . . . {Foucault or knife-edge methods}
- 7/0917 . . . . {Focus-error methods other than those covered by [G11B 7/0909](#) - [G11B 7/0916](#)}
- 2007/0919 . . . . . {Critical angle methods}
- 2007/092 . . . . . {Dither methods}
- 2007/0922 . . . . . {Far-field methods}
- 2007/0924 . . . . . {Skewed beams methods (using an angled beam, i.e. a beam which is reflected from the disc at an angle different from 90°)}
- 7/0925 . . . . {Electromechanical actuators for lens positioning ([G11B 7/0857](#) takes precedence)}
- 7/0927 . . . . . {for focusing only ([G11B 7/0937](#) takes precedence)}
- 7/0929 . . . . . {for tracking only ([G11B 7/0937](#) takes precedence)}
- 7/093 . . . . . {for focusing and tracking ([G11B 7/0932](#) - [G11B 7/0937](#) take precedence)}
- 7/0932 . . . . . {Details of sprung supports}
- 7/0933 . . . . . {Details of stationary parts}
- 7/0935 . . . . . {Details of the moving parts}
- 7/0937 . . . . . {Piezoelectric actuators}
- 7/0938 . . . . {servo format, e.g. guide tracks, pilot signals}
- 7/094 . . . . {Methods and circuits for servo offset compensation}
- 7/0941 . . . . {Methods and circuits for servo gain or phase compensation during operation (for initialising servos [G11B 7/0945](#))}
- 7/0943 . . . . {Methods and circuits for performing mathematical operations on individual detector segment outputs}
- 7/0945 . . . . {Methods for initialising servos, start-up sequences}
- 7/0946 . . . . {specially adapted for operation during external perturbations not related to the carrier or servo beam, e.g. vibration}
- 7/0948 . . . . {specially adapted for detection and avoidance or compensation of imperfections on the carrier, e.g. dust, scratches, dropouts ([G11B 7/095](#) takes precedence)}
- 7/095 . . . . specially adapted for discs, e.g. for compensation of eccentricity or wobble
- 7/0953 . . . . . {to compensate for eccentricity of the disc or disc tracks}
- 7/0956 . . . . . {to compensate for tilt, skew, warp or inclination of the disc, i.e. maintain the optical axis at right angles to the disc}
- 7/10 . . Interchangeable mountings, e.g. for replacement of head without readjustment {including interchangeable electrical adjuster boards}
- 7/12 . . 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](#))}
  - 7/121 . . . Protecting the head, e.g. against dust or impact with the record carrier
  - 7/122 . . . Flying-type heads, e.g. analogous to Winchester type in magnetic recording
  - 7/123 . . . Integrated head arrangements, e.g. with source and detectors mounted on the same substrate
  - 7/124 . . . the integrated head arrangements including waveguides

- 7/1245 . . . . the waveguides including means for electro-optical or acousto-optical deflection
- 7/125 . . . . 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
- 7/126 . . . . Circuits, methods or arrangements for laser control or stabilisation
- 7/1263 . . . . Power control during transducing, e.g. by monitoring
- 7/1267 . . . . Power calibration
- 7/127 . . . . Lasers; Multiple laser arrays {(lasers per se [H01S](#))}
- 7/1275 . . . . Two or more lasers having different wavelengths
- 7/128 . . . . Modulators ([G11B 7/1245](#) takes precedence)
- 7/13 . . . . Optical detectors therefor
- 7/131 . . . . Arrangement of detectors in a multiple array
- 7/133 . . . . Shape of individual detector elements
- 7/135 . . . . Means for guiding the beam from the source to the record carrier or from the record carrier to the detector
- 7/1353 . . . . 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](#))}
- 7/1356 . . . . Double or multiple prisms, i.e. having two or more prisms in cooperation
- 7/1359 . . . . Single prisms
- 7/1362 . . . . 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 . . . . {Catadioptric 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. non-linear optical layers or structures ([cover layers for near-field media G11B 7/24059](#))
- 7/24067 . . . Combinations of two or more layers with specific interrelation
- 7/2407 . . . Tracks or pits; Shape, structure or physical properties thereof ([layout of tracks or pits used as the identification information G11B 7/007](#))
- 7/24073 . . . Tracks
- 7/24076 . . . Cross sectional shape in the radial direction of a disc, e.g. asymmetrical cross sectional shape
- 7/24079 . . . Width or depth ([G11B 7/24076 takes precedence](#))
- 7/24082 . . . Meandering
- 7/24085 . . . Pits
- 7/24088 . . . for storing more than two values, i.e. multi-valued recording for data or prepits
- 7/24091 . . . Combinations of pits and tracks with specific interrelation
- 7/24094 . . . Indication parts or information parts for identification
- 7/24097 . . . Structures for detection, control, recording operation or replay operation; Special shapes or structures for centering or eccentricity prevention ([within laminated discs G11B 7/24021](#)); Arrangements for testing, inspecting or evaluating; Containers, cartridges or cassettes
- NOTE**
- When classifying in this group, classification is also made in group [G11B 23/00](#) if the subject matter disclosed in the context of an optical record carrier is of more general application
- 7/241 . . . characterised by the selection of the material
- 7/242 . . . of recording layers
- 7/243 . . . 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 Table, 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
- 7/253 . . . of substrates
- 2007/25301 . . . {comprising glass}
- 2007/25302 . . . {comprising metals}
- 2007/25303 . . . {comprising resins}

- 2007/25304 . . . . . {Polycarbonate [PC]}
- 2007/25305 . . . . . {Polyester, e.g. PET, PETG, PEN}
- 2007/25306 . . . . . {Polystyrene [PS]}
- 2007/25307 . . . . . {Polycycloolefines [COCs]}
- 2007/25308 . . . . . {Biodegradable polymers, cellulose included}
- 7/2531 . . . . . comprising glass
- 7/2532 . . . . . comprising metals
- 7/2533 . . . . . comprising resins
- 7/2534 . . . . . polycarbonates [PC]
- 7/2535 . . . . . polyesters, e.g. PET, PETG or PEN
- 7/2536 . . . . . polystyrene [PS]
- 7/2537 . . . . . epoxy resins
- 7/2538 . . . . . polycycloolefins [PCO]
- 7/2539 . . . . . biodegradable polymers, e.g. cellulose
- 7/254 . . . . . of protective topcoat layers
- 2007/25402 . . . . . {consisting essentially of organic resins}
- 2007/25405 . . . . . {comprising inorganic filler, e.g. particles, fibres}
- 2007/25408 . . . . . {consisting essentially of inorganic materials}
- 2007/25411 . . . . . {containing transition metal elements (Zn, Fe, Co, Ni, Pt)}
- 2007/25414 . . . . . {containing Group 13 elements (B, Al, Ga)}
- 2007/25417 . . . . . {containing Group 14 elements (C, Si, Ge, Sn)}
- 7/2542 . . . . . consisting essentially of organic resins
- 7/2545 . . . . . containing inorganic fillers, e.g. particles or fibres
- 7/2548 . . . . . consisting essentially of inorganic materials
- 7/256 . . . . . of layers improving adhesion between layers
- 7/257 . . . . . of layers having properties involved in recording or reproduction, e.g. optical interference layers or sensitising layers or dielectric layers, which are protecting the recording layers
- 2007/25701 . . . . . {consisting essentially of organic materials}
- 2007/25703 . . . . . {Resins}
- 2007/25705 . . . . . {consisting essentially of inorganic materials}
- 2007/25706 . . . . . {containing transition metal elements (Zn, Fe, Co, Ni, Pt)}
- 2007/25708 . . . . . {containing group 13 elements (B, Al, Ga)}
- 2007/2571 . . . . . {containing group 14 elements except carbon (Si, Ge, Sn, Pb)}
- 2007/25711 . . . . . {containing carbon}
- 2007/25713 . . . . . {containing nitrogen}
- 2007/25715 . . . . . {containing oxygen}
- 2007/25716 . . . . . {containing sulfur}
- 2007/25718 . . . . . {containing halides (F, Cl, Br, I)}
- 7/2572 . . . . . consisting essentially of organic materials
- 7/2575 . . . . . resins
- 7/2578 . . . . . consisting essentially of inorganic materials
- 7/258 . . . . . of reflective layers
- 2007/2581 . . . . . {based on aluminium}
- 2007/2582 . . . . . {based on silver}
- 2007/2583 . . . . . {based on gold}
- 7/2585 . . . . . based on aluminium
- 7/259 . . . . . based on silver
- 7/2595 . . . . . based on gold
- 7/26 . . . . . Apparatus or processes specially adapted for the manufacture of record carriers
- 7/261 . . . . . {Preparing a master, e.g. exposing photoresist, electroforming}
- 7/263 . . . . . {Preparing and using a stamper, e.g. pressing or injection molding substrates (production of optical record carriers, e.g. optical discs [B29D 17/005](#))}
- 7/265 . . . . . {Apparatus for the mass production of optical record carriers, e.g. complete production stations, transport systems}
- 7/266 . . . . . {Sputtering or spin-coating layers (sputtering in general [C23C 14/24](#); spin-coating in general [B05D 1/005](#))}
- 7/268 . . . . . {Post-production operations, e.g. initialising phase-change recording layers, checking for defects (investigating the presence of flaws or contamination in optical discs [G01N 21/9506](#))}
- 7/28 . . . . . Re-recording, i.e. transcribing information from one optical record carrier on to one or more similar or dissimilar record carriers
- 9/00 Recording or reproducing using a method not covered by one of the main groups [G11B 3/00](#) - [G11B 7/00](#); Record carriers therefor ([G11B 11/00](#) takes precedence {driving or moving of heads [G11B 21/02](#)})**
- 9/02 . . . . . using ferroelectric record carriers; Record carriers therefor
- 9/04 . . . . . using record carriers having variable electric resistance; Record carriers therefor
- 9/06 . . . . . using record carriers having variable electrical capacitance; Record carriers therefor ([G11B 9/02](#) takes precedence)
- 9/061 . . . . . {Record carriers characterised by their structure or form or by the selection of the material; Apparatus or processes specially adapted for the manufacture of record carriers (processes involving a single technical art and for which provision exists elsewhere, [see](#) the relevant class, e.g. [B05D](#), [F16N](#), [C08L](#))}
- 9/062 . . . . . {characterised by the form, e.g. comprising mechanical protection elements}
- 9/063 . . . . . {characterised by the selection of the material}
- 9/065 . . . . . {Additional layers for lubrication, wear protection or elimination of electrostatic charges of the interface between record carrier and head ([G11B 9/066](#), [G11B 9/067](#) and [G11B 9/068](#) take precedence)}
- 9/066 . . . . . {Electrically conductive layers ([G11B 9/068](#) takes precedence)}
- 9/067 . . . . . {Dielectric layers; Processes for providing electrical conductivity to them ([G11B 9/068](#) takes precedence)}
- 9/068 . . . . . {Moulding resin compositions}
- 9/07 . . . . . Heads for reproducing capacitive information
- 9/075 . . . . . {using mechanical contact with record carrier, e.g. by stylus}
- 9/08 . . . . . using electrostatic charge injection; Record carriers therefor
- 9/10 . . . . . using electron beam; Record carriers therefor ([G11B 9/08](#) takes precedence {[see](#) provisional also [G11B 11/03](#)})



- 9/12 . . . using near-field interactions; Record carriers therefor
- 9/14 . . . using microscopic probe means {, i.e. recording or reproducing by means directly associated with the tip of a microscopic electrical probe as used in Scanning Tunneling Microscopy [STM] or Atomic Force Microscopy [AFM] for inducing physical or electrical perturbations in a recording medium; Record carriers or media specially adapted for such transducing of information (marking using electrical current [B41M 5/20](#); measuring roughness or irregularity of surfaces [G01B 7/34](#); details of scanning-probe microscopes [G01Q](#))}
- 9/1409 . . . {Heads}
- 9/1418 . . . {Disposition or mounting of heads or record carriers ([G11B 17/00](#) and [G11B 19/00](#) take precedence)}
- 9/1427 . . . . {with provision for moving the heads or record carriers relatively to each other or for access to indexed parts without effectively imparting a relative movement}
- 9/1436 . . . . . {with provision for moving the heads or record carriers relatively to each other}
- 9/1445 . . . . . {switching at least one head in operating function; Controlling the relative spacing to keep the head operative, e.g. for allowing a tunnel current flow}
- 9/1454 . . . . . {Positioning the head or record carrier into or out of operative position or across information tracks; Alignment of the head relative to the surface of the record carrier ([G11B 9/1445](#) takes precedence)}
- 9/1463 . . . {Record carriers for recording or reproduction involving the use of microscopic probe means}
- 9/1472 . . . . {characterised by the form}
- 9/1481 . . . . . {Auxiliary features, e.g. reference or indexing surfaces}
- 9/149 . . . . {characterised by the memorising material or structure}
- 11/00 Recording on or reproducing from the same record carrier wherein for these two operations the methods are covered by different main groups of groups [G11B 3/00](#) - [G11B 7/00](#) or by different subgroups of group [G11B 9/00](#); Record carriers therefor {(driving or moving of heads [G11B 3/02](#), [G11B 5/48](#), [G11B 7/08](#), [G11B 21/02](#))}**
- NOTES**
- Groups [G11B 11/00](#) - [G11B 11/14](#) mainly cover:
    - combined systems or apparatus comprising both recording and reproducing using different methods;
    - record carriers therefor.
  - 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 3/68](#) - [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, {i.e. magneto-optical,} e.g. light-induced thermomagnetic 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](#))}
- 11/10554 . . . . . {the transducers being disposed on the same side of the carrier (flying heads [G11B 11/1058](#))}
- 11/10556 . . . . . {with provision for moving or switching or masking the transducers in or out of their operative position}
- 11/10558 . . . . . {in view of the loading or unloading of the carrier}
- 11/1056 . . . . . {Switching or mechanically reversing the magnetic field generator}
- 11/10563 . . . . . {Access of indexed parts}
- 11/10565 . . . . . {Marks for track change, e.g. prepits, gray codes}
- 11/10567 . . . . . {Mechanically moving the transducers}
- 11/10569 . . . . . {Swing arm positioners}
- 11/10571 . . . . . {Sled type positioners}
- 11/10573 . . . . . {Control of relative positioning of the magnetic and optical transducers, e.g. to move simultaneously}
- 11/10576 . . . . . {with provision for moving the transducers for maintaining alignment or spacing relative to the carrier}
- 11/10578 . . . . . {Servo format, e.g. prepits, guide tracks, pilot signals}
- 11/1058 . . . . . {Flying heads}
- 11/10582 . . . . . {Record carriers characterised by the selection of the material or by the structure or form}
- 11/10584 . . . . . {characterised by the form, e.g. comprising mechanical protection elements}
- 11/10586 . . . . . {characterised by the selection of the material}
- 11/10589 . . . . . {Details}
- 11/10591 . . . . . {for improving write-in properties, e.g. Curie-point temperature}
- 11/10593 . . . . . {for improving read-out properties, e.g. polarisation of light}
- 11/10595 . . . . . {Control of operating function}
- 11/10597 . . . . . {Adaptations for transducing various formats on the same or different carriers}
- 11/11 . . . . . using a beam, {e.g. of electrons or X-rays} other than a beam of light {or a magnetic field} for recording
- 11/115 . . . . . {using a beam,} {e.g. of electrons or X-rays} other than a beam of light for reproducing
- 11/12 . . . . . using recording by optical means ([G11B 11/03](#) takes precedence {[G11B 11/10](#) takes precedence})
- 11/14 . . . . . with reproducing by magnetic means
- 11/16 . . . . . using recording by mechanical cutting, deforming or pressing {([G11B 11/002](#) takes precedence)}
- 11/18 . . . . . with reproducing by optical means
- 11/20 . . . . . with reproducing by magnetic means
- 11/22 . . . . . with reproducing by capacitive means
- NOTE**  
see provisionally [G11B 9/06](#), [G11B 9/07](#); [G11B 11/05](#)
- 11/24 . . . . . using recording by near-field interactions
- 11/26 . . . . . using microscopic probe means {, i.e. recording by means directly associated with the tip of a microscopic electrical probe as used in scanning tunneling microscopy [STM] or atomic force microscopy [AFM] for inducing physical or electrical perturbations in a recording medium (marking using electrical current [B41M 5/20](#); measuring roughness or irregularity of surfaces [G01B 7/34](#); details of scanning-probe microscopes [G01Q](#))}
- 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 (driving or guiding heads [G11B 3/00](#) - [G11B 7/00](#), [G11B 21/00](#))**
- 15/005 . . . . . {Programmed access in sequence to indexed parts of tracks of operating tapes, by driving or guiding the tape (access by driving of both record carrier and head [G11B 15/1816](#); see prov. also [G11B 15/602](#))}
- 15/02 . . . . . Control of operating function, e.g. switching from recording to reproducing
- 15/023 . . . . . {remotely controlled}
- 15/026 . . . . . {by using processor, e.g. microcomputer}
- NOTE**  
see provisional also [G11B 15/005](#)

- 15/03 . . by using counters
- NOTE**  
see prov. also [G11B 15/00](#), [G11B 27/00](#)
- 15/04 . . Preventing, inhibiting, or warning against accidental erasing or double recording ([G11B 15/05 takes precedence](#))
- 15/05 . . by sensing features present on or derived from record carrier or container ([G11B 15/16 takes precedence](#))
- NOTE**  
see provisional also [G11B 15/02](#)
- 15/06 . . . by sensing auxiliary features on record carriers or containers, e.g. to stop machine near the end of a tape
- 15/07 . . . . on containers
- NOTE**  
see provisional also [G11B 15/06](#)
- 15/08 . . . . by photoelectric sensing ([G11B 15/07 takes precedence](#))
- 15/087 . . . by sensing recorded signals
- NOTE**  
see provisional also [G11B 15/06](#), [G11B 15/02](#), [G11B 27/00](#)
- 15/093 . . . by sensing driving condition of record carrier, e.g. travel, tape tension
- NOTE**  
see provisional also [G11B 15/16](#), [G11B 15/22](#), [G11B 15/46](#)
- 15/10 . . Manually-operated control; Solenoid-operated control ([G11B 15/44 takes precedence](#))
- 15/103 . . . {electrically operated}
- 15/106 . . . {mechanically operated}
- 15/12 . . Masking of heads; {circuits for} Selecting or switching of heads between operative and inoperative functions {or between different operative functions or for selection between operative heads}; Masking of beams, e.g. of light beams ({track selection by moving the magnetic head [G11B 5/54](#)})
- 15/125 . . . {conditioned by the operating function of the apparatus}
- 15/14 . . . Masking or switching periodically, e.g. of rotating heads
- 15/16 . . by sensing presence, absence or position of record carrier or container
- 15/17 . . . of container
- NOTE**  
see prov. also [G11B 15/16](#)
- 15/18 . Driving; Starting; Stopping; Arrangements for control or regulation thereof ({[G11B 15/56 takes precedence](#)})
- 15/1808 . . {Driving of both record carrier and head ([G11B 15/467 takes precedence](#); mounting of head [G11B 5/52](#))}
- 15/1816 . . . {Programmed access in sequence to indexed parts of operating tapes cooperating with rotating heads ([see provisional also G11B 15/005](#))}
- 15/1825 . . . {driving or moving the head in a direction which cuts across the direction of travel of the tape, e.g. for helicoïdal scanning}
- 15/1833 . . . . {with head driven in a plane, cyclically around an axis, e.g. on headwheel (construction of headwheel [G11B 5/53](#), [G11B 21/16](#); disposition of heads on headwheel [G11B 5/531](#), [G11B 21/02](#))}
- 15/1841 . . . . . {with provision for information tracking by moving the transducing part of the head relative to the headwheel, in the direction of the scanning movement, e.g. for skew or time base correction (in the direction which cuts across tracks, i.e. for track following [G11B 3/38](#), [G11B 5/588](#), [G11B 7/085](#), [G11B 21/08](#), [G11B 21/10](#); by controlling headwheel rotation [G11B 15/4733](#), by guiding the tape [G11B 15/602](#))}
- 15/185 . . . . . {using signals recorded in tracks disposed in parallel with the scanning direction}
- 15/1858 . . . . . {using auxiliary signals, i.e. pilot signals}
- 15/1866 . . . . . {superimposed on the main signal track}
- 15/1875 . . . {adaptations for special effects or editing ([signal processing or indexing therefor G11B 27/00](#))}
- 15/1883 . . {for record carriers inside containers}
- 15/1891 . . . {the record carrier being endless}
- 15/20 . . Moving record carrier backwards or forwards by finite amounts, i.e. backspacing, forward spacing
- 15/22 . . Stopping means ({[G11B 15/06 takes precedence](#)}; slowing-down preparatory to stopping or speed-changing [G11B 15/48](#); speed-controlling by mechanical linkage [G11B 15/50](#) ; inside container [G11B 23/04](#))}
- 15/24 . . Drive disengaging means
- 15/26 . . Driving record carriers by members acting directly or indirectly thereon ({[G11B 15/44 takes precedence](#); driving features inside container, [see G11B 23/04 and subgroups](#))}
- 15/28 . . . through rollers driving by frictional contact with the record carrier, e.g. capstan; Multiple arrangements of capstans or drums coupled to means for controlling the speed of the drive; Multiple capstan systems alternately engageable with record carrier to provide reversal
- 15/285 . . . . {through pneumatic means}
- 15/29 . . . . through pinch-rollers {or tape rolls}([G11B 15/295 takes precedence](#))
- 15/295 . . . . with single capstan or drum simultaneously driving the record carrier at two separate points of an isolated part thereof, e.g. the capstan acting directly on the tape rollers
- 15/30 . . . through the means for supporting the record carrier, e.g. mandrel, turntable
- 15/32 . . . through the reels or cores on to which the record carrier is wound

- 15/34 . . . through non-slip drive means, e.g. sprocket
- 15/38 . . Driving record carriers by pneumatic means  
{(pneumatic control for capstans driving  
the record carrier by frictional contact  
[G11B 15/285](#))}
- 15/385 . . . {directly, e.g. by rotating drum (guiding record  
carrier on rotating drum [G11B 15/61](#))}
- 15/40 . . Driving record carriers otherwise than by electric  
motor
- 15/42 . . . manually
- 15/43 . . Control or regulation of mechanical tension of  
record carrier, e.g. tape tension
- 15/44 . . Speed-changing arrangements; Reversing  
arrangements; Drive transfer means therefor
- 15/442 . . . {Control thereof}
- 15/444 . . . {reversing arrangements ([G11B 15/442](#) takes  
precedence)}
- 15/446 . . . . {by driving the reels only}
- 15/448 . . . . {automatic reverse drive transfer therefor}
- 15/46 . . Controlling, regulating, or indicating speed  
{(dependent on position of tape in reserve, loop  
[G11B 15/56](#), [G11B 15/58](#))}
- 15/463 . . . {by using pilot tracking tones embedded in  
binary coded signals, e.g. using DSV/CDS  
values of coded signals}
- 15/467 . . . in arrangements for recording or reproducing  
wherein both record carriers and heads are  
driven {see provisional also [G11B 15/1808](#)}
- 15/4671 . . . . {by controlling simultaneously the speed of  
the tape and the speed of the rotating head}
- 15/4672 . . . . . {with provision for information tracking}
- 15/4673 . . . . {by controlling the speed of the tape while  
the head is rotating}
- 15/4675 . . . . . {with provision for information tracking}
- 15/4676 . . . . . {using signals recorded in tracks  
disposed in parallel with the scanning  
direction}
- 15/4677 . . . . . . {using auxiliary signals, i.e. pilot  
signals}
- 15/4678 . . . . . . . {superimposed on the main signal  
track}
- 15/473 . . . . by controlling the speed of the heads
- NOTE**  
see prov. also [G11B 5/588](#)
- 15/4731 . . . . . {control of headwheel rotation (disposition  
or construction of headwheel motor  
[G11B 5/53](#), [G11B 21/02](#))}
- 15/4733 . . . . . . {with provision for information  
tracking, e.g. for time base correction}
- 15/4735 . . . . . . . {using signals recorded in tracks  
disposed parallel with the scanning  
direction}
- 15/4736 . . . . . . . . {using auxiliary signals, i.e. pilot  
signals}
- 15/4738 . . . . . . . . . {superimposed on the main  
signal track}
- 15/48 . . . Starting; Accelerating; Decelerating;  
Arrangements preventing malfunction during  
drive change
- 15/50 . . . by mechanical linkage, e.g. clutch
- 15/52 . . . by using signals recorded on, or derived from,  
record carrier
- 15/54 . . . by stroboscope; by tachometer
- 15/56 . . the record carrier having reserve loop, e.g. to  
minimise inertia during acceleration {measuring or  
control in connection therewith}
- 15/58 . . with vacuum column
- 15/60 . Guiding record carrier (guiding devices structurally  
associated with magazines or cassettes [G11B 23/04](#))
- 15/602 . . {for track selection, acquisition or following}
- 15/605 . . {without displacing the guiding means}
- 15/607 . . . . {Pneumatic guiding}
- 15/61 . . on drum, e.g. drum containing rotating heads  
{([G11B 15/66](#) takes precedence)}
- 15/615 . . . . {inside container}
- 15/62 . . Maintaining desired spacing between record  
carrier and head
- 15/64 . . . . by fluid-dynamic spacing
- 15/66 . . Threading; Loading; Automatic self-loading
- 15/662 . . . . {Positioning or locking of spool or reel}
- 15/665 . . . . by extracting loop of record carrier from  
container
- 15/6651 . . . . . {to pull the record carrier against non  
rotating heads}
- 15/6653 . . . . . {to pull the record carrier against drum}
- 15/6655 . . . . . . {using one loading ring, i.e. "C-type"  
([G11B 15/6658](#) takes precedence)}
- 15/6656 . . . . . . . {using two-sided extraction, i.e. "M-type"}
- 15/6658 . . . . . . . . {with two loading rings rotating in  
opposite directions}
- 15/67 . . . . by extracting end of record carrier from  
container or spool
- 15/671 . . . . . {using pneumatic means}
- 15/672 . . . . . {Extracting end of record carrier from  
container or single reel ([G11B 15/671](#) takes  
precedence)}
- 15/673 . . . . . {Threading end of record carrier externally  
to single reel ([G11B 15/671](#) takes  
precedence)}
- 15/674 . . . . . {Threading or attaching end of record carrier  
on or to single reel ([G11B 15/671](#) takes  
precedence)}
- 15/675 . Guiding containers {, e.g. loading, ejecting  
cassettes}
- 15/67502 . . {Details}
- 15/67505 . . . . {Servo control}
- 15/67507 . . . . {Ejection damping means}
- 15/6751 . . . {with movement of the cassette parallel to its  
main side, i.e. front loading ([G11B 15/67544](#)  
takes precedence)}
- 15/67513 . . . . {and movement of driving elements  
perpendicular thereto}
- 15/67515 . . . . . {with servo control}
- 15/67518 . . . . . {with ejection damping means}
- 15/67521 . . . . {of cassette with internal belt drive}
- 15/67523 . . . . . {with servo control}
- 15/67526 . . . . . {with ejection damping means}
- 15/67528 . . . . . {of endless tape cassette}
- 15/67531 . . . . . {with servo control}
- 15/67534 . . . . . {with ejection damping means}
- 15/67536 . . . . . {of cassette inside drawer}
- 15/67539 . . . . . {with servo control}
- 15/67542 . . . . . {with ejection damping means}
- 15/67544 . . . {with movement of the cassette parallel to  
its main side and subsequent movement  
perpendicular thereto, i.e. front loading}

- 15/67547 . . . {the two movements being made by the cassette holder}
- 15/67549 . . . . {with servo control}
- 15/67552 . . . . {with ejection damping means}
- 15/67555 . . . {the second movement only being made by the cassette holder}
- 15/67557 . . . . {with servo control}
- 15/67556 . . . . {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 clampers}
- 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 take precedence](#))
- 17/032 . . . . Positioning by moving the door or the cover ([G11B 17/035 takes precedence](#))
- 17/035 . . . . Positioning by moving the loading station
- 17/038 . . Centering or locking of a plurality of discs in a single cartridge
- 17/04 . . Feeding or guiding single record carrier to or from transducer unit ([guiding during transducing operation G11B 17/34](#))
- 17/0401 . . . {Details}
- 17/0402 . . . . {Servo control}
- 17/0404 . . . . . {with parallel drive rollers}
- 17/0405 . . . . {Closing mechanism, e.g. door}
- 17/0407 . . . . . {controlling the loading of the record carrier}
- 17/0408 . . . {of non-disc record carrier, e.g. card}
- 17/041 . . . specially adapted for discs contained within cartridges
- 17/043 . . . . Direct insertion, i.e. without external loading means
- 17/0432 . . . . . {adapted for discs of different sizes}
- 17/0434 . . . . . {with mechanism for subsequent vertical movement of the disc ([G11B 17/0438 takes precedence](#))}
- 17/0436 . . . . . {with opening mechanism of the cartridge shutter ([G11B 17/0438 takes precedence](#))}
- 17/0438 . . . . . {with mechanism for subsequent vertical movement of the disc and opening mechanism of the cartridge shutter}
- 17/044 . . . . Indirect insertion, i.e. with external loading means
- 17/046 . . . . . with pivoting loading means
- 17/0463 . . . . . {adapted for discs of different sizes}
- 17/0466 . . . . . {with opening mechanism of the cartridge shutter}

- 17/047 . . . . . with sliding loading means
- 17/0473 . . . . . {adapted for discs of different sizes}
- 17/0476 . . . . . {with opening mechanism of the cartridge shutter}
- 17/049 . . . . . Insertion of discs having to be extracted from the cartridge prior to recording or reproducing
- 17/05 . . . . . specially adapted for discs not contained within cartridges
- 17/051 . . . . . Direct insertion, i.e. without external loading means
- 17/0515 . . . . . {adapted for discs of different sizes}
- 17/053 . . . . . Indirect insertion, i.e. with external loading means
- 17/054 . . . . . with pivoting loading means
- 17/0545 . . . . . {adapted for discs of different sizes}
- 17/056 . . . . . with sliding loading means
- 17/0565 . . . . . {adapted for discs of different sizes}
- 17/057 . . . . . specially adapted for handling both discs contained within cartridges and discs not contained within cartridges
- 17/08 . . . . . from consecutive-access magazine of disc records
- 17/10 . . . . . with horizontal transfer to the turntable from a stack arranged with a vertical axis
- 17/12 . . . . . with axial transfer to the turntable from a stack with a vertical axis
- 17/14 . . . . . by mechanism in rotating centre post, e.g. permitting the playing of both sides of a record
- 17/16 . . . . . by mechanism in stationary centre post, e.g. with stepped post, using fingers on post
- 17/162 . . . . . {with means for detecting the diameter of the record}
- 17/165 . . . . . {with mechanical detecting means}
- 17/167 . . . . . {with optical detecting means}
- 17/18 . . . . . by mechanism operating on the edge of the disc record
- 17/20 . . . . . with transfer away from stack on turntable after playing
- 17/22 . . . . . from random access magazine of disc records
- 17/221 . . . . . {with movable magazine (G11B 17/24 - G11B 17/28 take precedence)}
- 17/223 . . . . . {in a vertical direction}
- 17/225 . . . . . {wherein the disks are transferred from a fixed magazine to a fixed playing unit using a moving carriage}
- 17/226 . . . . . {the magazine consisting of a single rotatable tray carrying the disks}
- 17/228 . . . . . {Control systems for magazines (G11B 17/225 takes precedence)}
- 17/24 . . . . . the magazine having a toroidal or part-toroidal shape
- NOTE**
- Group G11B 17/30 takes precedence over groups G11B 17/24 - G11B 17/28.
- 17/26 . . . . . the magazine having a cylindrical shape with vertical axis
- 17/28 . . . . . the magazine having a cylindrical shape with horizontal axis
- 17/30 . . . . . wherein the playing unit is moved according to the location of the selected record
- 17/32 . . . . . Maintaining desired spacing between record carrier and head, e.g. by fluid-dynamic spacing {(damping of vibrations of record carriers on turntables by fluid-dynamic means G11B 19/2018)}
- 17/34 . . . . . Guiding record carriers during transducing operation, e.g. for track following (G11B 17/32 takes precedence)
- 19/00 Driving, starting, stopping record carriers not specifically of filamentary or web form, or of supports therefor; Control thereof; Control of operating function {; 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 of problems due to temperature}
- 19/047 . . . . . {Recovery from power failure}
- 19/048 . . . . . {Testing of disk drives, e.g. to detect defects or prevent sudden failure}
- 19/06 . . . . . by counting or timing of machine operations
- 19/08 . . . . . by using devices external to the driving mechanisms, e.g. coin-freed switch (coin actuated mechanisms G07F 5/00)
- 19/10 . . . . . by sensing presence or absence of record in accessible stored position or on turntable
- 19/12 . . . . . by sensing distinguishing features of {or on} records, e.g. diameter {end mark}
- 2019/121 . . . . . {by photo-electric sensing}
- 19/122 . . . . . {involving the detection of an identification or authentication mark (record carriers indicating unauthorised or prior use G11B 23/28)}
- 19/124 . . . . . {involving the detection of diameter of disks (feeding or guiding of a single record carrier G11B 17/04 and subgroups)}
- 19/125 . . . . . {involving the detection of carrier data format}
- 19/127 . . . . . {involving detection of the number of sides, e.g. single or double, or layers, e.g. for multiple recording or reproducing layers}
- 19/128 . . . . . {involving the detection of track pitch or recording density}
- 19/14 . . . . . by sensing movement or position of head, e.g. means moving in correspondence with head movements
- 19/16 . . . . . Manual control
- 19/165 . . . . . {by closing the cover}
- 19/18 . . . . . Manual action on one element producing control effect indirectly by consequent action of driving mechanism
- 19/20 . . . . . Driving; Starting; Stopping; Control thereof

- 19/2009 . . {Turntables, hubs and motors for disk drives; Mounting of motors in the drive (means for clamping of disk to turntable [G11B 17/022](#) and subgroups)}
- 19/2018 . . . {Incorporating means for passive damping of vibration, either in the turntable, motor or mounting}
- 19/2027 . . . {Turntables or rotors incorporating balancing means; Means for detecting imbalance}
- 19/2036 . . . {Motors characterized by fluid-dynamic bearings}
- 19/2045 . . . {Hubs}
- 19/2054 . . {Spindle motor power-up sequences}
- 19/2063 . . {Spindle motor power-down sequences}
- 19/2072 . . . {for the reduction of power consumption during idle time}
- 19/2081 . . . {emergency power-down}
- 19/209 . . {in multiple disk arrays, e.g. spindle synchronisation in RAID systems}
- 19/22 . . Brakes other than speed-regulating brakes
- 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)
- 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](#))}
- 2020/00014 . . {the compressed signal being an audio signal}
- 2020/00021 . . . {lossless audio compression}
- 2020/00028 . . . {Advanced audio coding [AAC]}
- 2020/00036 . . . {AC-3, i.e. ATSC digital audio compression standard}
- 2020/00043 . . . {Adaptive transform acoustic coding [ATRAC]}
- 2020/0005 . . . {DTS audio codecs}
- 2020/00057 . . . {MPEG-1 or MPEG-2 audio layer III [MP3]}
- 2020/00065 . . . {Sigma-delta audio encoding}
- 2020/00072 . . {the compressed signal including a video signal}
- 2020/00079 . . {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}
- 20/00246 . . . . {wherein the key is obtained from a local device, e.g. device key initially stored by the player or by the recorder}
- 20/00253 . . . . {wherein the key is stored on the record carrier}
- 20/0026 . . . . . {the key being stored as a barcode}
- 20/00268 . . . . . {said barcode being recorded in a burst cutting area [BCA]}

20/00275 . . . . .	{ the key being stored on a chip attached to the record carrier }	20/00492 . . . . .	{ wherein content or user data is encrypted }
20/00282 . . . . .	{ the key being stored in the content area, e.g. program area, data area or user area (key stored in a management area <a href="#">G11B 20/00297</a> ) }	20/005 . . . . .	{ wherein only some specific parts of the content are encrypted, e.g. encryption limited to I-frames }
20/00289 . . . . .	{ wherein the key is stored as a watermark }	20/00507 . . . . .	{ 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 }
20/00297 . . . . .	{ the key being stored in a management area, e.g. the video manager [VMG] of a DVD }	20/00514 . . . . .	{ wherein the entire content is encrypted with the same key, e.g. disc key or master key }
20/00304 . . . . .	{ the key being stored in the lead-in area [LIA] }	20/00521 . . . . .	{ wherein each session of a multisession recording medium is encrypted with a separate encryption key }
20/00311 . . . . .	{ the key being stored in the lead-out area [LOA] }	20/00528 . . . . .	{ wherein each title is encrypted with a separate encryption key for each title, e.g. title key for movie, song or data file }
20/00318 . . . . .	{ the key being stored in the TOC }	20/00536 . . . . .	{ wherein encrypted content data is subjected to a further, iterated encryption, e.g. interwoven encryption }
20/00326 . . . . .	{ the key being embossed on the record carrier }	20/00543 . . . . .	{ wherein external data is encrypted, e.g. for secure communication with an external device or for encrypting content on a separate record carrier }
20/00333 . . . . .	{ the key being stored in header data, e.g. in sector headers }	20/0055 . . . . .	{ wherein license data is encrypted }
20/0034 . . . . .	{ the key being stored as a hologram }	20/00557 . . . . .	{ wherein further management data is encrypted, e.g. sector headers, TOC or the lead-in or lead-out areas }
20/00347 . . . . .	{ wherein the medium identifier is used as a key }	20/00565 . . . . .	{ wherein parity data is encrypted }
20/00355 . . . . .	{ the record carrier having a label that provides the key }	20/00572 . . . . .	{ involving measures which change the format of the recording medium }
20/00362 . . . . .	{ the key being obtained from a media key block [MKB] }	20/00579 . . . . .	{ 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 }
20/00369 . . . . .	{ 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 }	20/00586 . . . . .	{ said format change concerning the physical format of the recording medium }
20/00376 . . . . .	{ the key being stored by varying the pit format, e.g. depth, width, length or edge positions }	20/00594 . . . . .	{ wherein the shape of recording marks is altered, e.g. the depth, width, or length of pits }
20/00384 . . . . .	{ the key being derived from a physical signature of the record carrier, e.g. unique feature set }	20/00601 . . . . .	{ wherein properties of tracks are altered, e.g., by changing the wobble pattern or the track pitch, or by adding interruptions or eccentricity }
20/00391 . . . . .	{ the key being stored in subcodes, e.g. in the Q subcode of a CD }	20/00608 . . . . .	{ 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 }
20/00398 . . . . .	{ the key being stored in sync patterns }	20/00615 . . . . .	{ said format change concerning the logical format of the recording medium, e.g. the structure of sectors, blocks, or frames }
20/00405 . . . . .	{ the key being stored by varying characteristics of the recording track, e.g. by altering the track pitch or by modulating the wobble track }	20/00623 . . . . .	{ wherein the modification to the logical format directly concerns user data }
20/00413 . . . . .	{ wherein the key is input by a user }	20/0063 . . . . .	{ wherein the modification to the logical format mainly concerns management data, e.g., by changing the format of the TOC or the subcode }
20/0042 . . . . .	{ the copy protection scheme being related to a specific access protection standard }	20/00637 . . . . .	{ said management data being address data }
20/00427 . . . . .	{ advanced access content system [AACSS] }	20/00644 . . . . .	{ the address data format being such that there are overlapping address ranges }
20/00434 . . . . .	{ content protection for pre-recorded media [CPPM] }	20/00652 . . . . .	{ the address data being scrambled so that ascending address values do not reflect the physical order of data blocks }
20/00442 . . . . .	{ content protection for recordable media [CPRM] }		
20/00449 . . . . .	{ content scrambling system [CSS] }		
20/00456 . . . . .	{ digital transmission content protection [DTCP] }		
20/00463 . . . . .	{ high-bandwidth digital content protection [HDCP] }		
20/00471 . . . . .	{ video content protection system [VCPS] }		
20/00478 . . . . .	{ wherein contents are decrypted and re-encrypted with a different key when being copied from/to a record carrier }		
20/00485 . . . . .	{ characterised by a specific kind of data which is encrypted and recorded on and/or reproduced from the record carrier }		



- 20/00659 . . {involving a control step which is implemented as an executable file stored on the record carrier}
- 20/00666 . . {involving a step of erasing or nullifying data, e.g. data being overwritten with a random string}
- 20/00673 . . . {wherein the erased or nullified data include a cryptographic key}
- 20/00681 . . {involving measures which prevent a specific kind of data access}
- 20/00688 . . . {said measures preventing that a usable copy of recorded data can be made on another medium}
- 20/00695 . . . {said measures preventing that data are read from the recording medium}
- 20/00702 . . . {said measures preventing that data are recorded on the recording medium}
- 20/0071 . . {involving a purchase action}
- 20/00717 . . . {wherein accounting and payment are postponed, e.g. until the player can establish a network connection to the service provider}
- 20/00724 . . . {wherein a prepaid credit balance is registered on the recording medium}
- 20/00731 . . {involving a digital rights management system for enforcing a usage restriction}
- 20/00739 . . . {wherein the usage restriction is associated with a specific geographical region}
- 20/00746 . . . {wherein the usage restriction can be expressed as a specific number}
- 20/00753 . . . . {wherein the usage restriction limits the number of copies that can be made, e.g. CGMS, SCMS, or CCI flags}
- 20/0076 . . . . . {wherein the copy frequency, i.e. the number of copies in a given time period, is limited}
- 20/00768 . . . . . {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}
- 20/00775 . . . . . {wherein said copy control information is encoded in an encryption mode indicator [EMI]}
- 20/00782 . . . . . {wherein the usage restriction limits the number of times a program can be installed}
- 20/00789 . . . . . {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}
- 20/00797 . . . . . {wherein the usage restriction limits the number of times a content can be reproduced, e.g. using playback counters}
- 20/00804 . . . . . {wherein the usage restriction limits the number of users or devices that are allowed to access a given content}
- 20/00811 . . . . . {wherein said number is encoded as a cryptographic token or ticket}
- 20/00818 . . . {wherein the usage restriction limits the signal quality, e.g. by low-pass filtering of audio signals or by reducing the resolution of video signals}
- 20/00826 . . . . . {wherein a spoiler signal is added to degrade the signal quality}
- 20/00833 . . . {wherein the usage restriction limits the data access speed, e.g. by defining a maximum bit rate of the I/O interface}
- 20/0084 . . . {wherein the usage restriction can be expressed as a specific time or date}
- 20/00847 . . . . {wherein the usage restriction is defined by a licence file}
- 20/00855 . . {involving a step of exchanging information with a remote server}
- 20/00862 . . . . {wherein the remote server can grant the permission to use a content}
- 20/00869 . . . . {wherein the remote server can deliver the content to a receiving device}
- 20/00876 . . {wherein physical copy protection means are attached to the medium, e.g. holograms, sensors, or additional semiconductor circuitry}
- 20/00884 . . {involving a watermark, i.e. a barely perceptible transformation of the original data which can nevertheless be recognised by an algorithm}
- 20/00891 . . . . {embedded in audio data}
- 20/00898 . . . . {based on a hash function}
- 20/00905 . . . . {multiple watermarks used in combination}
- 20/00913 . . . . {based on a spread spectrum technique}
- 20/0092 . . {involving measures which are linked to media defects or read/write errors}
- 20/00927 . . . . {wherein said defects or errors are generated on purpose, e.g. intended scratches}
- 20/00934 . . . . . {said intentional errors occurring because of corrupted address information}
- 20/00942 . . . . . {said intentional errors occurring due to an invalid playback path or program chain}
- 20/00949 . . . . . {said intentional errors occurring due to bad sectors, which are either physically destroyed or which are declared defective in the defect management information}
- 20/00956 . . . . . {said intentional errors occurring due to an invalid TOC}
- 20/00963 . . . . {wherein said defects or errors are not generated on purpose, e.g. random defect patterns occurring during the normal manufacture}
- 20/00971 . . {involving measures for monitoring the industrial media production and distribution channels, e.g. for controlling content providers or the official manufacturers or replicators of recording media}
- 20/00978 . . {wherein the record carrier stores a trial version of a content}
- 20/00985 . . . . {the trial version being of lower quality than the original version}
- 20/00992 . {Circuits for stereophonic or quadraphonic recording or reproducing}
- 20/02 . Analogue recording or reproducing
- 20/025 . . {Error detection or correction}
- 20/04 . . Direct recording or reproducing
- 20/06 . . Angle-modulation recording or reproducing
- 20/08 . . Pulse-modulation recording or reproducing (pulse-code-modulation recording [G11B 20/10](#))
- 20/10 . Digital recording or reproducing
- 20/10009 . . {Improvement or modification of read or write signals}
- 20/10018 . . . . {analog processing for digital recording or reproduction ([G11B 20/10037](#) - [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 . . . . . {EPR4 or E2PR4, i.e. extended partial response class 4, polynomial  $(1-D)*(1+D)^3$ }
- 20/10074 . . . . . {EPR4, i.e. extended partial response class 4, polynomial  $(1-D)*(1+D)^2$ }
- 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  $(1+D)^2=1+2D+D^2$ }
- 20/10111 . . . . . {partial response PR(1,2,2,1)}
- 20/1012 . . . . . {partial response PR(1,2,2,2,1)}
- 20/10129 . . . . . {partial response PR(1,2,3,2,1)}
- 20/10138 . . . . . {partial response PR(2,3,3,2)}
- 20/10148 . . . . . {partial response PR(1,3,3,1)}
- 20/10157 . . . . . {PR3 or PR(2,1,-1), i.e. partial response class 3, polynomial  $(1+D)(2-D)=2+D-D^2$ }
- 20/10166 . . . . . {partial response PR(3,4,4,3)}
- 20/10175 . . . . . {PR4, PR(1,0,-1), i.e. partial response class 4, polynomial  $(1+D)(1-D)=(1-D^2)$ }
- 20/10185 . . . . . {PR5 or PR(-1,0,2,0,-1), i.e. partial response class 5, polynomial  $-((1+D)^2)*((1-D)^2)=-1+2D^2-D^4$ }
- 20/10194 . . . . . {using predistortion during writing ([G11B 20/10055 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 20/12 - G11B 20/18 take precedence](#))}
- 2020/10537 . . . . . {Audio or video recording}
- 2020/10546 . . . . . {specifically adapted for audio data}
- 2020/10555 . . . . . {wherein the frequency, the amplitude, or other characteristics of the audio signal is taken into account}
- 2020/10564 . . . . . {frequency}
- 2020/10574 . . . . . {volume or amplitude}
- 2020/10583 . . . . . {parameters controlling audio interpolation processes}
- 2020/10592 . . . . . {specifically adapted for recording or reproducing multichannel signals}
- 2020/10601 . . . . . {surround sound signal}
- 2020/10611 . . . . . {3D video data}
- 2020/1062 . . . . . {Data buffering arrangements, e.g. recording or playback buffers}
- 2020/10629 . . . . . {the buffer having a specific structure}
- 2020/10638 . . . . . {First-in-first-out memories [FIFO] buffers}
- 2020/10648 . . . . . {First-in-last-out memories [LIFO] buffers}

- 2020/10657 . . . . . {Cache memories for random data access, e.g. buffers wherein the data output is controlled by a priority parameter other than retention time}
- 2020/10666 . . . . . {Ring buffers, e.g. buffers wherein an iteratively progressing read or write pointer moves back to the beginning of the buffer when reaching the last storage cell}
- 2020/10675 . . . . . {aspects of buffer control}
- 2020/10685 . . . . . {input interface, i.e. the way data enter the buffer, e.g. by informing the sender that the buffer is busy}
- 2020/10694 . . . . . {output interface, i.e. the way data leave the buffer, e.g. by adjusting the clock rate}
- 2020/10703 . . . . . {processing rate of the buffer, e.g. by accelerating the data output}
- 2020/10712 . . . . . {buffer capacity, e.g. when the buffer capacity is exhausted, buffered data are overwritten with more recent data, accepting that the old data are lost}
- 2020/10722 . . . . . {wherein the size of the buffer is variable, e.g. by adding additional memory cells for coping with input streams that have high bit rates}
- 2020/10731 . . . . . {wherein the buffer I/O can be temporarily suspended, e.g. by refusing to accept further data to be buffered}
- 2020/1074 . . . . . {involving a specific threshold value}
- 2020/1075 . . . . . {the usage of the buffer being restricted to a specific kind of data}
- 2020/10759 . . . . . {content data}
- 2020/10768 . . . . . {by pre-caching the initial portion of songs or other recorded or downloaded data for starting playback instantly}
- 2020/10777 . . . . . {instructions or commands}
- 2020/10787 . . . . . {parameters, e.g. for decoding or encoding}
- 2020/10796 . . . . . {address data}
- 2020/10805 . . . . . {involving specific measures to prevent a buffer overflow}
- 2020/10814 . . . . . {involving specific measures to prevent a buffer underrun}
- 2020/10824 . . . . . {the buffer being used to prevent vibrations or shocks from causing delays}
- 2020/10833 . . . . . {Copying or moving data from one record carrier to another}
- 2020/10842 . . . . . {wherein not all recorded data are copied or moved}
- 2020/10851 . . . . . {Erasing data on the record carrier}
- 2020/10861 . . . . . {Finalising a record carrier after a recording operation, e.g. to ensure compatibility with a ROM medium}
- 2020/1087 . . . . . {wherein a selection is made among at least two alternative ways of processing}
- 2020/10879 . . . . . {the kind of record carrier being the selection criterion}
- 2020/10888 . . . . . {the kind of data being the selection criterion}
- 2020/10898 . . . . . {Overwriting or replacing recorded data}
- 2020/10907 . . . . . {using pseudo-overwriting, i.e. virtually or logically overwriting data on WORM media by remapping recorded blocks to alternate areas}
- 2020/10916 . . . . . {Seeking data on the record carrier for preparing an access to a specific address}
- 2020/10925 . . . . . {involving an inter-layer jump, i.e. changing from one recording layer to another}
- 2020/10935 . . . . . {wherein a time constraint must be met}
- 2020/10944 . . . . . {Real-time recording or reproducing, e.g. for ensuring seamless playback of AV data}
- 2020/10953 . . . . . {Concurrent recording or playback of different streams or files}
- 2020/10962 . . . . . {wherein both recording and playback take place simultaneously}
- 2020/10972 . . . . . {Management of interruptions, e.g. due to editing}
- 2020/10981 . . . . . {Recording or reproducing data when the data rate or the relative speed between record carrier and transducer is variable}
- 2020/1099 . . . . . {wherein a disc is spun at a variable speed}
- 20/12 . . . . . Formatting, e.g. arrangement of data block or words on the record carriers [{\(within interface between computers and data recorders G06F 3/06\)}](#)
- 20/1201 . . . . . {on tapes}
- 20/1202 . . . . . {with longitudinal tracks only}
- 20/1204 . . . . . {for continuous data, e.g. digitised analog information signals, pulse code modulated [PCM] data}
- 20/1205 . . . . . {for discontinuous data, e.g. digital information signals, computer programme data}
- 20/1207 . . . . . {with transverse tracks only}
- 20/1208 . . . . . {for continuous data, e.g. digitised analog information signals, pulse code modulated [PCM] data}
- 20/1209 . . . . . {for discontinuous data, e.g. digital information signals, computer programme data}
- 20/1211 . . . . . {with different data track configurations [\(longitudinal control tracks with transverse user data tracks G11B 20/1207\)}](#)}
- 20/1212 . . . . . {for continuous data, e.g. digitised analog information signals, pulse code modulated [PCM] data}
- 20/1214 . . . . . {for discontinuous data, e.g. digital information signals, computer programme data}
- 20/1215 . . . . . {on cards [\(optical aspect of optical cards G11B 7/0033\)}](#)}
- 20/1217 . . . . . {on discs}
- 2020/1218 . . . . . {wherein the formatting concerns a specific area of the disc}
- 2020/122 . . . . . {Burst cutting area [BCA]}
- 2020/1221 . . . . . {cluster, i.e. a data structure which consists of a fixed number of sectors or ECC blocks}
- 2020/1222 . . . . . {ECC block, i.e. a block of error correction encoded symbols which includes all parity data needed for decoding [\(pure error correction aspects G11B 20/18\)}](#)}
- 2020/1224 . . . . . {extent, i.e. a set of sectors which numbers form a continuous ascending sequence}
- 2020/1225 . . . . . {frame, i.e. a subunit of a sector containing user data, e.g. a sync frame}
- 2020/1227 . . . . . {one layer of multilayer disc}
- 2020/1228 . . . . . {middle zone or outer guard area of a multilayer disc}

2020/1229	. . . . .	{lead-in area}	2020/1272	. . . . .	{Burst indicator subcode [BIS]}
2020/1231	. . . . .	{lead-out area}	2020/1274	. . . . .	{stored in pre-pits, i.e. in embossed pits, ROM marks or prepits}
2020/1232	. . . . .	{sector, i.e. the minimal addressable physical data unit}	2020/1275	. . . . .	{Calibration data, e.g. specific training patterns for adjusting equalizer settings or other recording or playback parameters}
2020/1234	. . . . .	{wherein the sector is a headerless sector, i.e. it does not comprise an ID field}	2020/1277	. . . . .	{for managing gaps between two recordings, e.g. control data in linking areas, run-in or run-out fields, guard or buffer zones}
2020/1235	. . . . .	{session, i.e. a contiguous area having its own lead-in area, program area and lead-out area}	2020/1278	. . . . .	{Physical format specifications of the record carrier, e.g. compliance with a specific standard, recording density, number of layers, start of data zone or lead-out}
2020/1237	. . . . .	{recording side of a single layer medium}	2020/1279	. . . . .	{Permanent information and control data stored in the PIC zone of a Blu-Ray disc}
2020/1238	. . . . .	{track, i.e. the entire a spirally or concentrically arranged path on which the recording marks are located}	2020/1281	. . . . .	{Servo information}
2020/1239	. . . . .	{the track being a pregroove, e.g. the wobbled track of a recordable optical disc}	2020/1282	. . . . .	{in embedded servo fields}
2020/1241	. . . . .	{user area, i.e. the area of a disc where user data are to be recorded}	2020/1284	. . . . .	{in servo fields which split data fields}
2020/1242	. . . . .	{the area forming one or more zones, wherein each zone is shaped like an annulus or a circular sector}	2020/1285	. . . . .	{Status of the record carrier, e.g. space bit maps, flags indicating a formatting status or a write permission}
2020/1244	. . . . .	{CAV zone, in which a constant angular velocity is used}	2020/1287	. . . . .	{Synchronisation pattern, e.g. VCO fields (specific bit sequences of sync patterns <a href="#">G11B 20/1403</a> ; A/V synchronisation <a href="#">G11B 27/00</a> )}
2020/1245	. . . . .	{CLV zone, in which a constant linear velocity is used}	2020/1288	. . . . .	{Formatting by padding empty spaces with dummy data, e.g. writing zeroes or random data when de-icing optical discs}
2020/1247	. . . . .	{rewritable zone, e.g. a RAM zone of a hybrid disc having ROM and RAM areas}	2020/1289	. . . . .	{Formatting of user data}
2020/1248	. . . . .	{ROM zone, i.e. an unrewritable zone}	2020/1291	. . . . .	{wherein the formatting serves a specific purpose}
2020/1249	. . . . .	{wherein the bits are arranged on a two-dimensional hexagonal lattice}	2020/1292	. . . . .	{Enhancement of the total storage capacity}
20/1251	. . . . .	{for continuous data, e.g. digitised analog information signals, pulse code modulated [PCM] data}	2020/1294	. . . . .	{Increase of the access speed}
20/1252	. . . . .	{for discontinuous data, e.g. digital information signals, computer programme data}	2020/1295	. . . . .	{wherein the focus is on the read access speed}
20/1254	. . . . .	{for mixed data, i.e. continuous and discontinuous data}	2020/1297	. . . . .	{wherein the focus is on the write access speed}
2020/1255	. . . . .	{Fixed Block Architecture [FBA] format}	2020/1298	. . . . .	{Enhancement of the signal quality}
2020/1257	. . . . .	{Count Key Data [CKD] format}	20/14	. . . . .	using self-clocking codes
20/1258	. . . . .	{where blocks are arranged within multiple radial zones, e.g. Zone Bit Recording or Constant Density Recording discs, MCAV discs, MCLV discs}	20/1403	. . . . .	{characterised by the use of two levels}
2020/1259	. . . . .	{with ROM/RAM areas}	20/1407	. . . . .	{code representation depending on a single bit, i.e. where a one is always represented by a first code symbol while a zero is always represented by a second code symbol}
20/1261	. . . . .	{on films, e.g. for optical moving-picture soundtracks (optical aspect <a href="#">G11B 7/0032</a> )}	20/1411	. . . . .	{conversion to or from pulse width coding}
20/1262	. . . . .	{with more than one format/standard, e.g. conversion from CD-audio format to R-DAT format}	20/1415	. . . . .	{conversion to or from pulse frequency coding}
2020/1264	. . . . .	{wherein the formatting concerns a specific kind of data}			
2020/1265	. . . . .	{Control data, system data or management information, i.e. data used to access or process user data}			
2020/1267	. . . . .	{Address data}			
2020/1268	. . . . .	{Address in pregroove [ADIP] information}			
2020/1269	. . . . .	{Absolute time in pregroove [ATIP] information}			
2020/1271	. . . . .	{the address data being stored in a subcode, e.g. in the Q channel of a CD}			

20/1419	. . . . .	{to or from biphas level coding, i.e. to or from codes where a one is coded as a transition from a high to a low level during the middle of a bit cell and a zero is encoded as a transition from a low to a high level during the middle of a bit cell or <i>vice versa</i> , e.g. split phase code, Manchester code conversion to or from biphas space or mark coding, i.e. to or from codes where there is a transition at the beginning of every bit cell and a one has no second transition and a zero has a second transition one half of a bit period later or <i>vice versa</i> , e.g. double frequency code, FM code}	20/182	. . . . .	{using test patterns}
			2020/1823	. . . . .	{wherein a flag is set when errors are detected or qualified}
			2020/1826	. . . . .	{wherein a defect list or error map is generated}
			2020/183	. . . . .	{wherein at least one additional attempt is made to read or write the data when a first attempt is unsuccessful}
			20/1833	. . . . .	{by adding special lists or symbols to the coded information ( <a href="#">G11B 20/1806</a> , <a href="#">G11B 20/1866</a> take precedence)}
20/1423	. . . . .	{Code representation depending on subsequent bits, e.g. delay modulation, double density code, Miller code}	2020/1836	. . . . .	{using a Reed Solomon [RS] code}
20/1426	. . . . .	{conversion to or from block codes or representations thereof}	2020/184	. . . . .	{using a cross-interleaved Reed Solomon [CIRC]}
2020/143	. . . . .	{4 to 6 modulation}	2020/1843	. . . . .	{using a cyclic redundancy check [CRC]}
2020/1434	. . . . .	{8 to 9 modulation}	2020/1846	. . . . .	{using a picket 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}
2020/1438	. . . . .	{8 to 10 modulation}	2020/185	. . . . .	{using a low density parity check [LDPC] code}
2020/1442	. . . . .	{8 to 12 modulation}	2020/1853	. . . . .	{using a product code which has inner and outer parity symbols}
2020/1446	. . . . .	{16 to 17 modulation}	2020/1856	. . . . .	{using a turbo code}
2020/1449	. . . . .	{24 to 25 modulation}	2020/1859	. . . . .	{wherein a trellis is used for decoding the error correcting code}
2020/1453	. . . . .	{17PP modulation, i.e. the parity preserving RLL(1,7) code with rate 2/3 used on Blu-Ray discs}	2020/1863	. . . . .	{wherein the Viterbi algorithm is used for decoding the error correcting code}
2020/1457	. . . . .	{wherein DC control is performed by calculating a digital sum value [DSV]}	20/1866	. . . . .	{by interleaving ( <a href="#">G11B 20/1809</a> takes precedence)}
2020/1461	. . . . .	{8 to 14 modulation, e.g. the EFM code used on CDs or mini-discs}	2020/1869	. . . . .	{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}
2020/1465	. . . . .	{8 to 16 modulation, e.g. the EFM+ code used on DVDs}	2020/1873	. . . . .	{Temporary defect structures for write-once discs, e.g. TDDS, TDMA or TDFL}
2020/1469	. . . . .	{modulation code with one or more merging bits between consecutive codewords}	20/1876	. . . . .	{Interpolating methods}
2020/1473	. . . . .	{modulation code without any merging bits}	20/1879	. . . . .	{Direct read-after-write methods}
2020/1476	. . . . .	{Synchronisation patterns; Coping with defects thereof}	20/1883	. . . . .	{Methods for assignment of alternate areas for defective areas}
2020/148	. . . . .	{using error detecting or error correcting codes}	20/1886	. . . . .	{with tapes}
2020/1484	. . . . .	{Codewords used in servo patterns}	20/1889	. . . . .	{with discs}
20/1488	. . . . .	{characterised by the use of three levels}	2020/1893	. . . . .	{using linear replacement to relocate data from a defective block to a non-contiguous spare area, e.g. with a secondary defect list [SDL]}
20/1492	. . . . .	{two levels are symmetric, in respect of the sign to the third level which is "zero"}	2020/1896	. . . . .	{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]}
20/1496	. . . . .	{characterised by the use of more than three levels}	20/20	. . . . .	for correction of skew for multitrack recording
20/16	. . . . .	using non self-clocking codes, i.e. the clock signals are either recorded in a separate clocking track or in a combination of several information tracks	20/22	. . . . .	for reducing distortions
20/18	. . . . .	Error detection or correction; Testing {, e.g. of drop-outs}	20/225	. . . . .	{for reducing wow or flutter ( <a href="#">by controlling the speed of the record carrier G11B 15/46</a> , <a href="#">G11B 19/28</a> )}
20/1803	. . . . .	{by redundancy in data representation}	20/24	. . . . .	for reducing noise (( <a href="#">control of amplification in general, e.g. dependent upon noise level H03G</a> ))
20/1806	. . . . .	{Pulse code modulation systems for audio signals ( <a href="#">G11B 20/1803</a> takes precedence)}	<b>21/00</b>	<b>Head arrangements not specific to the method of recording or reproducing</b>	
20/1809	. . . . .	{by interleaving}	21/003	. {Disposition of fixed heads, e.g. for scanning, selecting or following of tracks}	
20/1813	. . . . .	{by adding special bits or symbols to the coded information ( <a href="#">G11B 20/1809</a> takes precedence)}	21/006	. . {for track following}	
20/1816	. . . . .	{Testing}			

- 21/02 . Driving or moving of heads
- 21/022 . . {Programmed access in sequence to indexed parts of operating record carriers}
- 21/025 . . . {of rotating discs}
- 21/027 . . . {of tapes}
- 21/03 . . 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](#))}
- 21/04 . . 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)}
- 21/043 . . . {for stationary discs}
- 21/046 . . . {details of the feed mechanism}
- 21/06 . . . the record carrier having {mechanical} means to ensure traverse movement of the head {, e.g. grooves}
- 21/08 . . Track changing or selecting ([G11B 21/12](#) takes precedence){during transducing operation}
- 21/081 . . . {Access to indexed tracks or parts of continuous track}
- 21/083 . . . . {on discs}
- 21/085 . . . . {with track following of accessed part}
- 21/086 . . . . {on tapes}
- 21/088 . . . . {with track following of accessed part}
- 21/10 . . 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](#))}
- 21/103 . . . {on tapes}
- 21/106 . . . {on disks}
- 21/12 . . Raising and lowering; Back-spacing or forward-spacing along track; Returning to starting position {otherwise than during transducing operation}
- 21/14 . . . manually
- 21/16 . Supporting the heads; Supporting the sockets for plug-in heads
- 21/18 . . while the head is moving
- 21/20 . . while the head is in operative position but stationary or permitting minor movements to follow irregularities in surface of record carrier
- 21/21 . . . with provision for maintaining desired spacing of head from record carrier, e.g. fluid-dynamic spacing, slider
- 21/22 . . while the head is out of operative position
- 21/24 . . Head support adjustments
- 21/26 . . Means for interchange or replacement of head or head element
- 23/00 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.
- 23/0007 . {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
- 23/0014 . {record carriers not specifically of filamentary or web form ([G11B 23/0057](#) takes precedence)}
- 23/0021 . . {discs}
- 23/0028 . . . {Details}
- 23/0035 . . . . {means incorporated in the disc, e.g. hub, to enable its guiding, loading or driving (means for driving the head [G11B 21/06](#); guiding the disc for centering or locking [G11B 17/022](#); turntables or spindles for driving [G11B 19/2009](#))}
- 23/0042 . . . . . {with provision for auxiliary features (sensing such features [G11B 17/00](#), [G11B 19/02](#))}
- 23/005 . . . {flexible discs ([G11B 23/0035](#) takes precedence)}
- 23/0057 . {Intermediate mediums, i.e. mediums provided with an information structure not specific to the method of reproducing or duplication such as matrixes for mechanical pressing of an information structure (for record carriers with directly readable mechanical information [G11B 3/685](#)); record carriers having a relief information structure provided with or included in layers not specific for a single reproducing method; apparatus or processes specially adapted for their manufacture}
- 23/0064 . . {mediums or carriers characterised by the selection of the material}
- 23/0071 . . . {additional layers for lubrication or wear protection (lubricating means not integrated in the record carrier structure [G11B 23/50](#))}
- 23/0078 . . . {information structure layers using metallic or dielectric coatings}
- 23/0085 . . . {intermediate mediums using a photosensitive material, e.g. photo-resist}
- 23/0092 . . . {molding resin compositions}
- 23/02 . Containers; Storing means {both adapted to cooperate with the recording or reproducing means}
- 23/021 . . {comprising means for reducing influence of physical parameters, e.g. temperature change, moisture (combined with means for reconditioning or cleaning [G11B 23/507](#))}
- 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} (G11B 23/12 takes precedence ; cassettes with sealing or locking means G11B 23/28; dummy cassettes for locking in the drive G11B 33/005)
- 23/041 . . . {Details}
- 23/042 . . . . {Auxiliary features (sensing such features G11B 15/06)}
- 23/043 . . . . {Brakes for tapes or tape reels}
- 23/044 . . . . {Reels or cores; positioning of the reels in the cassette}
- 23/045 . . . . {Covers}
- 23/046 . . . . {Indicating means, e.g. quantity of tape}
- 23/047 . . . . {Guiding means}
- 23/048 . . . . {Driving features}
- 23/049 . . . {Cassettes for special applications not otherwise provided for}
- 23/06 . . . for housing endless webs or filaments
- 23/07 . . . . using a single reel or core
- 23/08 . . . for housing webs or filaments having two distinct ends
- 23/087 . . . . using two different reels or cores
- 23/08707 . . . . . {Details}
- 23/08714 . . . . . {Auxiliary features (sensing such features G11B 15/06)}
- 23/08721 . . . . . {Brakes for tapes or tape reels (G11B 23/08707 takes precedence)}
- 23/08728 . . . . . {Reels or cores; positioning of the reels in the cassette}
- 23/08735 . . . . . {Covers}
- 23/08742 . . . . . {in combination with brake means}
- 23/0875 . . . . . {Indicating means, e.g. quantity of tape}
- 23/08757 . . . . . {Guiding means}
- 23/08764 . . . . . {Liner sheets}
- 23/08771 . . . . . {Pressure pads}
- 23/08778 . . . . . {Driving features, e.g. belt}
- 23/08785 . . . . . {Envelopes}
- 23/08792 . . . . . {Shielding devices}
- 23/093 . . . . . the reels or cores being coaxial
- 23/107 . . . . . using one reel or core, one end of the record carrier coming out of the magazine or cassette
- 23/113 . . . Apparatus or processes specially adapted for the manufacture of magazines or cassettes {, e.g. initial loading into container (processes involving a single technical art and for which provision exists elsewhere, see the relevant class, e.g. B21, B29, B65)}
- 23/12 . . . Bins for random storage of webs or filaments
- 23/14 . . . providing ability to repeat location, e.g. using sprocket holes
- 23/16 . . . Record carriers with single-track for recording at spaced intervals along the track thereof, e.g. for speech or language training {contains no documents}
- 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 . . . {Anti-theft arrangements, e.g. Electronic Article Surveillance [EAS] tags}
- 23/287 . . . {by mechanical lock}
- 23/288 . . . {Protecting disks from being written or overwritten}
- 23/30 . . . with provision for auxiliary signals
- 23/32 . . . Electrical or mechanical contacting means; Tape stop foils

- 23/34 . . Signal means additional to the main recording track, e.g. photoelectric sensing of sprocket holes for timing
- 23/36 . . Signals on record carriers or on containers and recorded by the same method as the main recording
- 23/38 . Visual features other than those contained in record tracks or represented by sprocket holes {the visual signals being auxiliary signals}
- 23/40 . . Identifying or analogous means applied to or incorporated in the record carrier and not intended for visual display simultaneously with the playing-back of the record carrier, e.g. label, leader, photograph
- 23/42 . . Marks for indexing, speed-controlling, synchronising, or timing
- 23/44 . . Information for display simultaneously with playback of the record, e.g. photographic matter (associated working of cameras or projectors with sound recording or reproducing means [G03B 31/00](#))
- 23/50 . Reconditioning of record carriers; Cleaning of record carriers {; Carrying-off electrostatic charges}([G11B 3/58](#) takes precedence)
- 23/502 . . {of tape carriers}
- 23/505 . . {of disk carriers}
- 23/507 . . . {combined with means for reducing influence of physical parameters, e.g. temperature change, moisture}
- 25/00 Apparatus characterised by the shape of record carrier employed but not specific to the method of recording or reproducing {, e.g. dictating apparatus; Combinations of such apparatus}**
- 25/02 . using cylindrical record carriers
- 25/04 . using flat record carriers, e.g. disc, card
- 25/043 . . {using rotating discs}
- 25/046 . . {using stationary discs, or cards provided with a circular recording area (driving heads relatively to stationary record carriers for mechanical transducing [G11B 3/40](#); automatic feed mechanism producing a transducing traverse of the head across stationary disk tracks [G11B 21/043](#))}
- 25/06 . using web-form record carriers, e.g. tape
- 25/063 . . {using tape inside container}
- 25/066 . . {adapted for use with containers of different sizes or configurations; adaptor devices therefor}
- 25/08 . using filamentary record carriers, e.g. wire
- 25/10 . Apparatus capable of using record carriers defined in more than one of the sub-groups [G11B 25/02](#) - [G11B 25/08](#); {Adaptor devices therefor}
- 27/00 Editing; Indexing; Addressing; Timing or synchronising; Monitoring; Measuring tape travel**
- 27/002 . {Programmed access in sequence to a plurality of record carriers or indexed parts, e.g. tracks, thereof, e.g. for editing; (transfer of record carriers from magazine [G11B 15/68](#), [G11B 17/10](#); [G11B 17/22](#))}
- 27/005 . {Reproducing at a different information rate from the information rate of recording (for television signals [H04N 5/783](#))}
- 27/007 . . {reproducing continuously a part of the information, i.e. repeating}
- 27/02 . Editing, e.g. varying the order of information signals recorded on, or reproduced from, record carriers
- 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 {; 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 means incorporated in magazine or cassette G11B 23/046 and G11B 23/0875; indicating measured values in general G01D](#))}
- 27/36 . . . . . Monitoring, i.e. supervising the progress of recording or reproducing {(for digital recording [G11B 20/00](#) and s.gr.; for monitoring, testing or measuring of TV recorders of the type covered by [H04N 5/76](#) and subgroups, see [H04N 17/06](#))}
- 31/00 Arrangements for the associated working of recording or reproducing apparatus with related apparatus** (with cameras or projectors [G03B 31/00](#) {; recording/reproducing of music for electrophonic musical instruments [G10H 1/0033](#); automatic arrangements for answering calls or for recording messages for absent subscribers [H04M 1/64](#); telephonic communication systems adapted for combination with dictation recording and playback systems [H04M 11/10](#); connection of TV recorder with other related apparatus, e.g. TV camera or receiver, in which the TV signal is significantly involved [H04N](#), e.g. [H04N 23/00](#), [H04N 5/765](#); combination of radio or TV with other apparatus, e.g. with vehicles [H05K 11/00](#))}
- 31/003 . . . . . {with radio receiver}
- 31/006 . . . . . {with video camera or receiver}
- 31/02 . . . . . with automatic musical instruments
- 33/00 Constructional parts, details or accessories not provided for in the other groups of this subclass**
- 33/005 . . . . . {Means for locking the disc or cassette receiving slot, e.g. dummy cassettes locked in the slot}
- 33/02 . . . . . Cabinets; Cases; Stands; Disposition of apparatus therein or thereon
- 33/022 . . . . . {Cases}
- 33/025 . . . . . {Portable cases}
- 33/027 . . . . . {Covers ([G11B 33/022](#) takes precedence; with means for guiding the record carrier [G11B 17/34](#))}
- 33/04 . . . . . modified to store record carriers {(containers, storing means adapted for cooperation with the recording or reproducing apparatus [G11B 23/02](#))}
- 33/0405 . . . . . {for storing discs (anti-theft cases with locking means [E05B 73/0023](#))}
- 33/0411 . . . . . {Single disc boxes ([G11B 33/0461](#) takes precedence)}
- 33/0416 . . . . . {for disc cartridges}
- 33/0422 . . . . . {for discs without cartridge}
- 33/0427 . . . . . {comprising centre hole locking means}
- 33/0433 . . . . . {Multiple disc containers ([G11B 33/0461](#) takes precedence)}
- 33/0438 . . . . . {for disc cartridges}
- 33/0444 . . . . . {for discs without cartridge}
- 33/045 . . . . . {comprising centre hole locking means}
- 33/0455 . . . . . {for single disc boxes}
- 33/0461 . . . . . {Disc storage racks}
- 33/0466 . . . . . {for disc cartridges}
- 33/0472 . . . . . {for discs without cartridge}
- 33/0477 . . . . . {comprising centre hole locking means}
- 33/0483 . . . . . {for single disc boxes}
- 33/0488 . . . . . {in boxes or containers comprising additional sound reproducing or activating means}
- 33/0494 . . . . . {packages made by folding}
- 33/06 . . . . . combined with other apparatus having a different main function
- 33/08 . . . . . Insulation or absorption of undesired vibrations or sounds
- 33/10 . . . . . Indicating arrangements; Warning arrangements {([G11B 15/04](#), [G11B 19/04](#), [G11B 27/34](#), [G11B 27/36](#) take precedence)}
- 33/12 . . . . . Disposition of constructional parts in the apparatus, e.g. of power supply, of modules
- 33/121 . . . . . {the apparatus comprising a single recording/reproducing device}
- 33/122 . . . . . {Arrangements for providing electrical connections, e.g. connectors, cables, switches}
- 33/123 . . . . . {Mounting arrangements of 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 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-Video], 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
- 2220/412 . . . 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
- 2220/45 . . Hierarchical combination of record carriers, e.g. HDD for fast access, optical discs for long term storage or tapes for backup
- 2220/455 . . . 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
- 2220/60 . . Solid state media ([details of solid state memory devices G11C](#))
- 2220/61 . . wherein solid state memory is used for storing A/V content ([storing computer data in solid state memories G06F](#))
- 2220/63 . . 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
- 2220/65 . . wherein solid state memory is used for storing indexing information or metadata
- 2220/652 . . . said memory being attached to the recording medium
- 2220/655 . . . . Memory in cassette [MIC]
- 2220/657 . . . . Memory in disc [MID]
- 2220/80 . . Indexing information stored in optical or magnetic or other strip attached to cassette or disc, e.g. barcodes attached to a recording medium
- 2220/90 . . Tape-like record carriers
- 2220/91 . . Helical scan format, wherein tracks are slightly tilted with respect to tape direction, e.g. VHS, DAT, DVC, AIT or exabyte
- 2220/913 . . . Digital audio tape [DAT] format
- 2220/916 . . . Digital data storage [DDS] format
- 2220/93 . . Longitudinal format, wherein tracks are in the direction of the tape, read with a static head, e.g. DCC

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- 2220/95 . . Serpentine format, wherein a single track or group of tracks traverses the tape plural times from one end to the other
- 2220/953 . . . Digital linear tape [DLT] format
- 2220/956 . . . Linear tape open [LTO] format