## Cooperative Patent Classification

### H ELECTRICITY

#### H01 ELECTRIC ELEMENTS

##### H01F MAGNETS; INDUCTANCES; TRANSFORMERS; SELECTION OF MATERIALS FOR THEIR MAGNETIC PROPERTIES

(ceramics based on ferrites C04B 35/26; alloys C22C { construction of loading coils H01B}; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R; thermomagnetic devices H10N 15/00)

**NOTE**

In this subclass, inductances and transformers are regarded as being "for power supply" if they are intended for this purpose even in systems operating at frequencies above 60 cycles/sec.

**WARNING**

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

<table>
<thead>
<tr>
<th>1/00</th>
<th>Magnets or magnetic bodies characterised by the magnetic materials therefor; Selection of materials for their magnetic properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/009</td>
<td>Antiferromagnetic materials, i.e. materials exhibiting a Néel transition temperature (H01F 1/0036 takes precedence)</td>
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<tr>
<td>1/0018</td>
<td>Diamagnetic or paramagnetic materials, i.e. materials with low susceptibility and no hysteresis (H01F 1/0036 takes precedence)</td>
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<tr>
<td>1/0023</td>
<td>Thick magnetic films (forming thick magnetic films H01F 41/16)</td>
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<tr>
<td>1/0036</td>
<td>Showing low dimensional magnetism, i.e. spin rearrangements due to a restriction of dimensions, e.g. showing giant magnetoresistivity, H01F 1/153, H01F 1/42 and H01F 1/00 take precedence; magnetoresistive sensors G01D 5/16, G01R 33/06, magnetoresistive recording G11B 5/39; magnetic-field-controlled resistors H10N 50/10</td>
</tr>
<tr>
<td>1/0045</td>
<td>Zero dimensional, e.g. nanoparticles, soft nanoparticles for medical/biological use (preparation of fullerenes in general C01B 32/15)</td>
</tr>
<tr>
<td>1/0054</td>
<td>Coated nanoparticles, e.g. nanoparticles coated with organic surfactant</td>
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<tr>
<td>1/0063</td>
<td>{ in a non-magnetic matrix, e.g. granular solids (granular films H01F 10/007)</td>
</tr>
<tr>
<td>1/0072</td>
<td>One dimensional, i.e. linear or dendritic nanostructures</td>
</tr>
<tr>
<td>1/0081</td>
<td>[ in a non-magnetic matrix, e.g. Fe-nanowires in a nanoporous membrane</td>
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<tr>
<td>1/009</td>
<td>{ bidimensional, e.g. nanoscale period nanomagnet arrays (H01F 1/0007 takes precedence)</td>
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<tr>
<td>1/01</td>
<td>of inorganic materials (H01F 1/44 takes precedence)</td>
</tr>
<tr>
<td>1/012</td>
<td>Adapted for magnetic entropy change by magnetocaloric effect, e.g. used as magnetic refrigerating material (refrigeration systems using magnetic effects F25B 21/00)</td>
</tr>
<tr>
<td>1/015</td>
<td>Metals or alloys</td>
</tr>
<tr>
<td>1/017</td>
<td>Compounds</td>
</tr>
<tr>
<td>1/03</td>
<td>Characterised by their coercivity (H01F 1/40 takes precedence)</td>
</tr>
<tr>
<td>1/0302</td>
<td>Characterised by unspecified or heterogeneous hardness or specially adapted for magnetic hardness transitions</td>
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<tr>
<td>1/0304</td>
<td>Adapted for large Barkhausen jumps or domain wall rotations, e.g. WIEGAND or MATTEUCCI effect (H01F 1/143 and H01F 1/15391 take precedence)</td>
</tr>
<tr>
<td>1/0306</td>
<td>Metals or alloys, e.g. LAVES phase alloys of the MgCu2-type (H01F 1/0304 takes precedence)</td>
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<tr>
<td>1/0308</td>
<td>With magnetic shape memory [MSM], i.e. with lattice transformations driven by a magnetic field, e.g. Heusler alloys</td>
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<tr>
<td>1/0311</td>
<td>Compounds (H01F 1/0304 takes precedence)</td>
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<tr>
<td>1/0313</td>
<td>Oxidic compounds</td>
</tr>
<tr>
<td>1/0315</td>
<td>Ferrites</td>
</tr>
<tr>
<td>1/0317</td>
<td>Manganese</td>
</tr>
<tr>
<td>1/032</td>
<td>Of hard-magnetic materials</td>
</tr>
<tr>
<td>1/04</td>
<td>Metals or alloys</td>
</tr>
</tbody>
</table>
1/047 . . . . . . . Alloys characterised by their composition

**NOTE**
In groups H01F 1/053 - H01F 1/059, an alloy is classified in the last appropriate place.

1/053 . . . . . . . containing rare earth metals
1/0533 . . . . . . . (in a bonding agent)
1/0536 . . . . . . . [sintered]
1/055 . . . . . . . and magnetic transition metals, e.g. SmCo$_5$
1/0551 . . . . . . . (in the form of particles, e.g. rapid quenched powders or ribbon flakes)
1/0552 . . . . . . . (with a protective layer)
1/0553 . . . . . . . (obtained by reduction or by hydrogen decrепitation or embrittlement)
1/0555 . . . . . . . (pressed, sintered or bonded together)
1/0556 . . . . . . . (pressed)
1/0557 . . . . . . . (sintered)
1/0558 . . . . . . . (bonded together)
1/057 . . . . . . . and IIIa elements, e.g. Nd$_2$Fe$_{14}$B
1/0571 . . . . . . . (in the form of particles, e.g. rapid quenched powders or ribbon flakes)
1/0572 . . . . . . . (with a protective layer)
1/0573 . . . . . . . (obtained by reduction or by hydrogen decrепitation or embrittlement)
1/0574 . . . . . . . (obtained by liquid dynamic compaction)
1/0575 . . . . . . . (pressed, sintered or bonded together)
1/0576 . . . . . . . (pressed, e.g. hot working)
1/0577 . . . . . . . (sintered)
1/0578 . . . . . . . (bonded together)
1/0579 . . . . . . . (with exchange spin coupling between hard and soft nanophases, e.g. nanocomposite spring magnets)
1/058 . . . . . . . and IVa elements, e.g. Gd$_2$Fe$_{14}$C
1/059 . . . . . . . and Va elements, e.g. Sm$_2$Fe$_7$N$_2$
1/0593 . . . . . . . (of tetragonal ThMn$_{12}$-structure)
1/0596 . . . . . . . (of rhombic or rhombohedral Th$_2$Zn$_{17}$ structure or hexagonal Th$_2$Ni$_{17}$ structure)
1/06 . . . . . . . in the form of particles, e.g. powder (H01F 1/047 takes precedence ; record carriers G11B 5/70605))
1/061 . . . . . . . with a protective layer
1/063 . . . . . . . with a non magnetic core
1/065 . . . . . . . obtained by a reduction
1/066 . . . . . . . obtained by liquid dynamic compaction
1/068 . . . . . . . having a L10 crystallographic structure, e.g. [Co,Fe][Pt,Pd] (nano)particles
1/08 . . . . . . . pressed, sintered, or bound together
1/083 . . . . . . . (in a bonding agent)
1/086 . . . . . . . (sintered)
1/09 . . . . . . . mixtures of metallic and non-metallic particles; metallic particles having oxide skin
1/10 . . . . . . . non-metallic substances, e.g. ferrites {, e.g. [(Ba,Sn)O(Fe$_2$O$_3$)$_6$] ferrites with hexagonal structure}
1/11 . . . . . . . in the form of particles (for magnetic record carriers G11B 5/706260)
1/111 . . . . . . . with a non-magnetic core
1/112 . . . . . . . with a skin (H01F 1/113 takes precedence)
1/113 . . . . . . . in a bonding agent
1/117 . . . . . . . Flexible bodies
1/12 . . . . . . . of soft-magnetic materials
1/14 . . . . . . . metals or alloys
1/143 . . . . . . . (in the form of wires (H01F 1/147 takes precedence))
1/147 . . . . . . . Alloys characterised by their composition (treatment thereof for enhancing their electromagnetic properties C21D 8/12)

**NOTE**
In groups H01F 1/14708 - H01F 1/15391, an alloy is classified in the last appropriate place.

1/14708 . . . . . . . [Fe-Ni based alloys (pure Fe or Ni H01F 1/14, H01F 1/16 or H01F 1/20)]
1/14716 . . . . . . . (in the form of sheets)
1/14725 . . . . . . . (with insulating coating)
1/14733 . . . . . . . (in the form of particles)
1/14741 . . . . . . . (pressed, sintered or bonded together)
1/1475 . . . . . . . (the particles being insulated)
1/14758 . . . . . . . (by macromolecular organic substances)
1/14766 . . . . . . . [Fe-Si based alloys]
1/14775 . . . . . . . (in the form of sheets)
1/14783 . . . . . . . (with insulating coating)
1/14791 . . . . . . . [Fe-Si-Al based alloys, e.g. Sendust]
1/153 . . . . . . . Amorphous metallic alloys, e.g. glassy metals (making ferrous amorphous alloys C22C 33/003))
1/15308 . . . . . . . (based on FeNi (H01F 1/15325 takes precedence))
1/15316 . . . . . . . (based on Co (H01F 1/15325 takes precedence))
1/15325 . . . . . . . (containing rare earths)
1/15333 . . . . . . . (containing nanocrystallites, e.g. obtained by annealing)
1/15341 . . . . . . . (Preparation processes therefor)
1/1535 . . . . . . . (by powder metallurgy, e.g. spark erosion)
1/15358 . . . . . . . (Making agglomerates therefrom, e.g. by pressing)
1/15366 . . . . . . . (using a binder)
1/15375 . . . . . . . (using polymers)
1/15383 . . . . . . . (Applying coatings thereon (H01F 1/15366 takes precedence))
1/15391 . . . . . . . (Elongated structures, e.g. wires)
1/16 . . . . . . . (in the form of sheets (H01F 1/147 takes precedence))
1/18 . . . . . . . with insulating coating
H01F

1/20 . . . . in the form of particles, e.g. powder (H01F 1/147 takes precedence)
1/22 . . . . pressed, sintered, or bound together
1/24 . . . . the particles being insulated
1/26 . . . . by macromolecular organic substances
1/28 . . . . dispersed or suspended in a bonding agent
1/33 . . . . mixtures of metallic and non-metallic particles; metallic particles having oxide skin
1/34 . . . . non-metallic substances, e.g. ferrites
1/342 . . . . {Oxides (H01F 1/36 and H01F 1/38 take precedence)
1/344 . . . . {Ferries, e.g. having a cubic spinel structure (X2+O)(Y23+O3), e.g. magnetite Fe3O4
1/346 . . . . [(TO4) 3] with T= Si, Al, Fe, Ga (H01F 10/24 takes precedence; Faraday rotators G02F 1/09)
1/348 . . . . {Hexaferrites with decreased hardness or anisotropy, i.e. with increased permeability in the microwave (GHz) range, e.g. having a hexagonal crystallographic structure
1/36 . . . . in the form of particles (H01F 1/346, H01F 1/348 and H01F 1/38 take precedence)
1/37 . . . . in a bonding agent
1/375 . . . . Flexible bodies
1/38 . . . . amorphous, e.g. amorphous oxides
1/40 . . . . of magnetic semiconductor materials, e.g. CdCrO4 (devices using galvano-magnetic or similar effects H10N 50/00)
1/401 . . . . [diluted]

NOTE
In group H01F 1/401, a diluted magnetic semiconductor (DMS) is classified in the last appropriate place
1/402 . . . . [of II-VI type, e.g. Zn1-x Cx Se]
1/404 . . . . [of III-V type, e.g. In1-x Mnx As]
1/405 . . . . [of IV type, e.g. Ge1-x Mnx]
1/407 . . . . {Diluted non-magnetic ions in a magnetic cation-sublattice, e.g. perovskites, La1-x(Ba,Sr)xMnO3}
1/408 . . . . {half-metallic, i.e. having only one electronic spin direction at the Fermi level, e.g. CrO2, Heusler alloys (H01F 10/1936 takes precedence}
1/42 . . . . of organic or organo-metallic materials (. e.g. graphene) (H01F 1/44 takes precedence)
1/44 . . . . of magnetic liquids, e.g. ferrofluids (particles in a bonding agent H01F 1/28, H01F 1/36, H01F 1/37)
1/442 . . . . [the magnetic component being a metal or alloy, e.g. Fe (H01F 1/447 takes precedence)
1/445 . . . . [the magnetic component being a compound, e.g. Fe3O4 (H01F 1/447 takes precedence)
1/447 . . . . [characterised by magnetoviscosity, e.g. magnetorheological, magnetohystrotrropic, magnetodilatant liquids (electrorheological fluids C10M 171/001)

3/00 Cores, Yokes, or armatures (magnetic materials H01F 1/00; permanent magnets H01F 7/02)
2003/005 . . . . [Magnetic cores for receiving several windings with perpendicular axes, e.g. for antennae or inductive power transfer]
3/02 . . . . made from sheets
3/04 . . . . made from strips or ribbons
3/06 . . . . made from wires
3/08 . . . . made from powder (powder coatings on sheets H01F 3/02; on strips or ribbons H01F 3/04; on wires H01F 3/06)
3/10 . . . . Composite arrangements of magnetic circuits
2003/103 . . . . [Magnetic circuits with permanent magnets]
2003/106 . . . . [Magnetic circuits using combinations of different magnetic materials]
3/12 . . . . Magnetic shunt paths
3/14 . . . . Constrictions; Gaps, e.g. air-gaps (in magnetic shunt paths H01F 3/12)
5/00 Coils (superconducting coils H01F 6/06; fixed inductances of the signal type H01F 17/00)
5/003 . . . . [Printed circuit coils]
2005/006 . . . . [with conical spiral form]
5/02 . . . . wound on non-magnetic supports, e.g. formers
2005/022 . . . . [wound on formers with several winding chambers separated by flanges, e.g. for high voltage applications]
2005/025 . . . . [wound on coaxial arrangement of two or more formers]
2005/027 . . . . [wound on formers for receiving several coils with perpendicular winding axes, e.g. for antennae or inductive power transfer]
5/04 . . . . Arrangements of electric connections to coils, e.g. leads
2005/043 . . . . [having multiple pin terminals, e.g. arranged in two parallel lines at both sides of the coil]
2005/046 . . . . [Details of formers and pin terminals related to mounting on printed circuits]
5/06 . . . . Insulation of windings
6/00 Superconducting magnets; Superconducting coils {magnetic resonance assemblies using superconducting coil systems G01R 33/3815}
2006/001 . . . . [Constructive details of inductive current limiters]
6/003 . . . . [Methods and means for discharging superconductive storage (superconducting alloys C22C; static memories with superconducting elements G11C 11/44; superconducting circuit breakers with contacts H01H 33/004; superconducting switches for low power H03K 17/92; superconducting material H10N 60/00; power cryostons H10N 60/355)]
6/005 . . . . [Methods and means for increasing the stored energy in superconductive coils by increments (flux pumps)]
6/006 . . . . [Supplying energising or de-energising current; Flux pumps]
6/008 . . . . [Electric circuit arrangements for energising superconductive electromagnets]
6/02 . . . . Quenching; Protection arrangements during quenching ([protection circuits H02H 7/001])
6/04 . . . . Cooling
6/06 . . . . Coils, e.g. winding, insulating, terminating or casing arrangements therefor

CPC - 2023.08
6/065 . . . [Feed-through bushings, terminals and joints (leading of conductors or axes through casings of transformers H01F 7/04)]

7/00 Magnets (superconducting magnets H01F 6/00; for separation of solid materials or fluids B03C 1/00; for bench or like work-holders B23B 31/28, B23Q 3/00; work-holding devices B25B 11/00; lifting magnets B66C 1/00; [operating or controlling locks using permanent magnets E05B 47/0038; for electric meters G01R; for relays H01H; {for electric discharge tubes H01J, e.g. H01J 3/24, H01J 23/10, H01J 29/68; for dynamo-electric machines H02K})

7/02 . . . Permanent magnets {PM]

7/0205 . . . [Magnetic circuits with PM in general]

7/021 . . . [Construction of PM (H01F 7/0278 takes precedence; PM compositions H01F 1/032)]

7/0215 . . . [Flexible forms, sheets]

7/0221 . . . [Mounting means for PM, supporting, coating, encapsulating PM]

7/0226 . . . [PM with variable field strength (H01E 7/0284 takes precedence)]

7/0231 . . . [Magnetic circuits with PM for power or force generation]

7/0236 . . . [Magnetic suspension or levitation (for vehicles B06L 13/04; magnetic bearings F16C 39/063)]

7/0242 . . . [Magnetic drives, magnetic coupling devices]

7/0247 . . . [Orienting, locating, transporting arrangements]

7/0252 . . . [PM holding devices (H01F 7/021, H01F 7/0215, H01F 7/0226 take precedence)]

7/0257 . . . [Lifting, pick-up magnetic objects]

7/0263 . . . [Closures, bags, bands, engagement devices with male and female parts]

7/0268 . . . [Magnetic cylinders]

7/0273 . . . [Magnetic circuits with PM for magnetic field generation]

7/0278 . . . [for generating uniform fields, focusing, deflecting electrically charged particles (for magnetic separation by Lorentz force B03C 1/023; specially adapted for NMR applications G01R 33/383)]

7/0284 . . . [using a trimmable or adjustable magnetic circuit, e.g. for a symmetric dipole or quadrupole magnetic field]

7/0289 . . . [Transducers, loudspeakers, moving coil arrangements]

7/0294 . . . [Detection, inspection, magnetic treatment]

7/04 . . . Means for releasing the attractive force

7/06 . . . Electromagnets; Actuators including electromagnets (electric coils H01F 5/00; devices for holding workpieces using electric force B23Q 3/15; load-engaging elements for lifting articles electromagnetically B66C 1/00; electromagnetic couplings F16D 27/00; magnetic brakes F16D 63/00; electromagnetically operated valves F16K 11/24, F16K 31/00; analysing materials by magnetic means G01N 27/72, G01N 27/80; electromagnets for winding mechanical clocks G04C 1/07; electromagnetic relays H01H 51/00; windings for salient poles of dynamo-electric machines H02K 3/18; electromagnets for telegraphic communication H04L; for arc lamps H05B 31/28)]

2007/062 . . . [Details of terminals or connectors for electromagnets]

7/064 . . . [Circuit arrangements for actuating electromagnets (circuit arrangements for obtaining special operating characteristics H01F 7/18; driving circuits for electromagnets making use of a switching regulator H01H 47/325)]

7/066 . . . [Electromagnets with movable winding]

2007/068 . . . [using printed circuit coils]

7/08 . . . with armatures

7/081 . . . [Magnetic constructions]

2007/083 . . . [External yoke surrounding the coil bobbin, e.g. made of bent magnetic sheet]

2007/085 . . . [Yoke or polar piece between coil bobbin and armature having a gap, e.g. filled with nonmagnetic material]

2007/086 . . . [Structural details of the armature]

7/088 . . . [provided with means for absorbing shocks]

7/10 . . . specially adapted for alternating current

7/11 . . . reducing or eliminating the effects of eddy currents

7/12 . . . having anti-chattering arrangements

7/1205 . . . [having short-circuited conductors (electromagnetic relays provided with short-circuited conducting sleeves H01H 47/00)]

7/121 . . . Guiding or setting position of armatures, e.g. retaining armatures in their end position

7/122 . . . by permanent magnets (H01F 7/1615, H01F 7/1646 take precedence)]

7/123 . . . by ancillary coil

7/124 . . . by mechanical latch, e.g. detent

7/126 . . . Supporting or mounting

7/127 . . . Assembling

7/128 . . . Encapsulating, encasing or sealing

7/129 . . . of armatures

7/13 . . . characterised by pulling-force characteristics

7/14 . . . Pivoting armatures (H01F 7/17 takes precedence)

7/145 . . . [Rotary electromagnets with variable gap (with fixed gap or torque motors H02K 26/00)]

7/16 . . . Rectilinearly-movable armatures (H01F 7/17 takes precedence)

7/1607 . . . [Armatures entering the winding]

7/1615 . . . [Armatures or stationary parts of magnetic circuit having permanent magnet]

7/1623 . . . [Armatures having T-form]
[Antiferromagnetic thin films, i.e. films exhibiting a Néel transition temperature (H01F 10/3218 and H01F 10/3268 take precedence)]

[Organic or organo-metallic films, e.g. nonmolecular films obtained by Langmuir-Blodgett technique, graphene]

[Ultrathin or granular films (H01F 10/005 and H01F 10/3272 take precedence; applying ultrathin or granular layers to substrates H01F 41/301)]

[Characterised by the coupling or physical contact with connecting or interacting conductors]

[Characterised by magnetic layers (H01F 10/32 takes precedence); applying thin magnetic films to substrates H01F 41/14)]

[Characterised by the composition]

[Being metals or alloys (intermetallic compounds H01F 10/18)]

[Containing rare earth metals (H01F 10/133 takes precedence)]

[Amorphous metallic alloys, e.g. glassy metals (H01F 10/3204 takes precedence)]

**NOTE**

In this group, amorphous metallic alloys are classified in the last appropriate place.

[Containing iron or nickel]

[Containing cobalt]

[Containing rare earth metals]

[Containing transition metals]

[Containing iron]

[Containing cobalt]

[Containing nanocrystallites, e.g. obtained by annealing]

[Containing iron or nickel (H01F 10/126, H01F 10/13, H01F 10/16 take precedence)]

**NOTE**

In this group, alloys containing iron or nickel are classified in the last appropriate place.
exchange-coupled multilayers to substrates
Nanostructured superlattices { (applying spin-exchange-coupled multilayers, e.g. NiFe/Cu/NiFeFeMn) }

Characterised by the substrate or intermediate layers

Exchange coupling of magnetic film pairs via a non-magnetic spacer

Spin-exchange-coupled multilayers wherein the magnetisation of the free layer is switched by a spin-polarised current, e.g. spin torque effect

Spin-exchange-coupled multilayers wherein the magnetic pinned or free layers are laminated without anti-parallel coupling within the pinned and free layers

Apparatus or processes for magnetising or demagnetising ( { devices for holding workpieces using magnetic or electric force acting directly on the workpieces B23Q 3/15; for degaussing ships B63G 9/06; for clocks or watches G04D 9/00; recording or erasing of information on magnetic record carriers G11B 5/00; demagnetising arrangements for colour television H04N 9/29) }

Fixed inductances of the signal type { (coils in general H01F 5/00; inductors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof and multistep manufacturing processes therefor H01L 28/10) }

Printed inductances (printed coils for dynamoelectric machines H02K 3/26; printed circuits H05K)
H01F

2017/008 . . . (Electric or magnetic shielding of printed inductances)
2017/0086 . . . [on semiconductor substrate (inductors for integrated circuits H01L 28/10)]
2017/0093 . . . (Common mode choke coil)
17/02 . without magnetic core
17/03 . with ceramic former
17/04 . with magnetic core
17/041 . . . [Means for preventing rotation or displacement of the core]
17/043 . . . [with two, usually identical or nearly identical parts enclosing completely the coil (pot cores)]
17/045 . . . [with core of cylindric geometry and coil wound along its longitudinal axis, i.e. rod or drum core]
2017/046 . . . [helical coil made of flat wire, e.g. with smaller extension of wire cross section in the direction of the longitudinal axis]
2017/048 . . . [with encapsulating core, e.g. made of resin and magnetic powder]
17/06 . with core substantially closed in itself, e.g. toroid
17/062 . . . [Toroidal core with turns of coil around it]
2017/065 . . . [Core mounted around conductor to absorb noise, e.g. EMI filter]
2017/067 . . . [Core with two or more holes to lead through conductor]
17/08 . . . Loading coils for telecommunication circuits

19/00 Fixed transformers or mutual inductances of the signal type (H01F 36/00 takes precedence)
19/02 . Audio-frequency transformers or mutual inductances, i.e. not suitable for handling frequencies considerably beyond the audio range
19/04 . Transformers or mutual inductances suitable for handling frequencies considerably beyond the audio range (resonant circuits H03H)
19/06 . Broad-band transformers, e.g. suitable for handling frequencies well down into the audio range
19/08 . Transformers having magnetic bias, e.g. for handling pulses
2019/085 . . . [Transformer for galvanic isolation]

21/00 Variable inductances or transformers of the signal type (H01F 36/00 takes precedence)
21/005 . . . [Inductances without magnetic core]
21/02 . continuously variable, e.g. variometers
21/04 . . . by relative movement of turns or parts of windings
21/06 . . . by movement of core or part of core relative to the windings as a whole
21/065 . . . [Measures for obtaining a desired relation between the position of the core and the inductance]
21/08 . . . by varying the permeability of the core, e.g. by varying magnetic bias
21/10 . . . by means of a movable shield
21/12 . discontinuously variable, e.g. tapped
2021/125 . . . [Printed variable inductor with taps, e.g. for VCO]

27/00 Details of transformers or inductances, in general
27/002 . . . [Arrangements provided on the transformer facilitating its transport]
27/004 . . . [Arrangements for interchanging inductances, transformers or coils thereof]
27/346 . . . {Preventing or reducing leakage fields (using magnetic shields H01F 27/36; using auxiliary windings H01F 27/38)}

27/348 . . . {Preventing eddy currents}

27/36 . . . Electric or magnetic shields or screens (movable for varying inductance H01E 21/10)

27/361 . . . {made of combinations of electrically conductive material and ferromagnetic material}

27/363 . . . {made of electrically conductive material}

27/366 . . . {made of ferromagnetic material}

27/368 . . . Auxiliary core members; Auxiliary coils or windings

27/385 . . . {for reducing harmonics}

27/40 . Structural association with built-in electric component, e.g. fuse

27/402 . . . {Association of measuring or protective means}

2027/404 . . . {Protective devices specially adapted for fluid filled transformers}

2027/406 . . . {Temperature sensor or protection}

27/408 . . . {Association with diode or rectifier}

27/42 . Circuits specially adapted for the purpose of modifying, or compensating for, electric characteristics of transformers, reactors, or choke coils (circuits for controlling transformers, reactors or choke coils, for the purpose of obtaining a desired output H02P 13/00; impedance networks H03H)

27/422 . . . {for instrument transformers}

27/425 . . . {for voltage transformers}

27/427 . . . {for current transformers}

29/00 Variable transformers or inductances not covered by group H01F 21/00 {{tap change devices H01H 9/0005}}

29/02 . . . with tappings on coil or winding; with provision for rearrangement or interconnection of windings

29/025 . . . {Constructional details of transformers or reactors with tapping on coil or windings}

29/04 . . . having provision for tap-changing without interrupting the load current

29/06 . . . with current collector gliding or rolling on or along winding

29/08 . . . with core, coil, winding, or shield movable to offset variation of voltage or phase shift, e.g. induction regulators

29/10 . . . having movable part of magnetic circuit (thigh leakage transformers H01F 38/08; dynamo-electric machines with movable part of magnetic circuit H02K 23/44, H02K 23/48)

29/12 . . . having movable coil, winding, or part thereof; having movable shield

29/14 . . . with variable magnetic bias (amplitude modulation by means of variable impedance element H03C 1/08); magnetic amplifiers H03F; (circuits for automatic telephonic communication H04M 3/00)

29/143 . . . {with control winding for generating magnetic bias}

29/146 . . . {Constructional details}

30/00 Fixed transformers not covered by group H01F 19/00

30/02 . . . Auto-transformers
Adaptations of transformers or inductances for specific applications or functions

30/04 . having two or more secondary windings, each supplying a separate load, e.g. for radio set power supplies
30/06 . characterised by the structure
30/08 . . without magnetic core
30/10 . . Single-phase transformers (H01F 30/16 takes precedence)
30/12 . . Two-phase, three-phase or polyphase transformers
30/14 . . . for changing the number of phases
30/16 . . Toroidal transformers
36/00 Transformers with superconductive windings or with windings operating at cryogenic temperature (superconducting magnets or superconducting coils H01F 6/00)
37/00 Fixed inductances not covered by group H01F 17/00
37/005 . [without magnetic core]
38/00 Adaptations of transformers or inductances for specific applications or functions

2038/003 . [High frequency transformer for microwave oven]
2038/006 . [matrix transformer consisting of several interconnected individual transformers working as a whole]
38/02 . for non-linear operation
38/023 . . [of inductances]
2038/026 . . . [non-linear inductive arrangements for converters, e.g. with additional windings]
38/04 . . for frequency changing
38/06 . . for changing the wave shape
38/08 . High-leakage transformers or inductances
38/085 . . [Welding transformers]
38/10 . Ballasts, e.g. for discharge lamps
38/12 . Ignition, e.g. for IC engines
2038/122 . . [with rod-shaped core]
2038/125 . . [with oil insulation]
2038/127 . . [with magnetic circuit including permanent magnet]
38/14 . Inductive couplings { (for wireless supply or distribution of electric power using inductive coupling H02L 50/10) }
2038/143 . . [for signals]
2038/146 . . [in combination with capacitive coupling]
38/16 . Cascade transformers, e.g. for use with extra high tension
38/18 . Rotary transformers
38/20 . Instruments transformers
38/22 . . for single phase ac
38/24 . . Voltage transformers
38/26 . . . Constructions
38/28 . . Current transformers
38/30 . . . Constructions
2038/305 . . . . . . . [with toroidal magnetic core]
38/32 . . . . Circuit arrangements
38/34 . . . Combined voltage and current transformers
38/36 . . . Constructions
38/38 . . . for polyphase ac
38/40 . . . for dc
38/42 . . Flyback transformers
2038/423 . . . [with adjusting potentiometers]
2038/426 . . . [with gap in transformer core]
for applying magnetic films to substrates by cathode sputtering (H01F 41/18)

- ... in the form of strip material
- ... Winding two or more wires, e.g. bifilar winding
- ... Twisting
- ... Winding coils of special form (winding conductors onto closed formers or cores H01F 41/08)

2041/0711 . . . . . . {Winding saddle or deflection coils}
41/073 . . . . . . Winding onto elongate formers
41/074 . . . . . . Winding flat coils
41/076 . . . . . . Forming taps or terminals while winding, e.g. by wrapping or soldering the wire onto pins, or by directly forming terminals from the wire
41/077 . . . . . . Deforming the cross section or shape of the winding material while winding
41/079 . . . . . . Measuring electrical characteristics while winding
41/08 . . . . . . Winding conductors onto closed formers or cores, e.g. threading conductors through toroidal cores
41/082 . . . . . . Devices for guiding or positioning the winding material on the former
41/084 . . . . . . for forming pancake coils
41/086 . . . . . . in a special configuration on the former, e.g. orthocyclic coils or open mesh coils
41/088 . . . . . . using revolving flyers
41/09 . . . . . . Winding machines having two or more work holders or formers
41/092 . . . . . . Turrets; Turntables
41/094 . . . . . . Tensioning or braking devices
41/096 . . . . . . Dispensing or feeding devices
41/098 . . . . . . Mandrels; Formers
41/10 . . . . . . Connecting leads to windings (making electric connections in general H01R 43/00)
41/12 . . . . . . Insulating of windings (impregnating or encapsulating of transformers H01F 41/005; of conductors in general H01B 13/06)
41/122 . . . . . . [Insulating between turns or between winding layers]
41/125 . . . . . . [Other insulating structures; Insulating between coil and core, between different winding sections, around the coil]
41/127 . . . . . . [Encapsulating or impregnating (encapsulating coil and core H01F 41/005)]
41/14 . . . . . . for applying magnetic films to substrates
41/16 . . . . . . the magnetic material being applied in the form of particles, e.g. by serigraphy (to form thick magnetic films or precursors therefor)
41/18 . . . . . . by cathode sputtering
41/183 . . . . [Sputtering targets therefor]