

Compilation of Changes to the CPC Scheme Between 2015.12 and 2016.01

Presentation Details

Entries for new symbols and headings:	<i>Black text in italics</i>
Entries for existing symbols and headings	
—text insertions:	<i>Green text in italics with yellow background</i>
—text deletions:	Red strikethrough text with grey background
Entries for deleted symbols and headings:	Black strikethrough text

- In cases when the originating project cannot be found, "N/A" is given for the Project information (e.g. the change could be due to an Editorial Correction).
- Projects ending in "-F" indicate finalisation after reclassification was completed.

Project: N/A (A01N)

- U A01N 37/00** **Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom having three bonds to hetero atoms with at the most two bonds to halogen, e.g. carboxylic acids (containing cyclopropane carboxylic acids [A01N 53/00](#))**
- A01N 37/18 • containing the group -CO-N<, e.g. carboxylic acid amides or imides; Thio analogues thereof
- A01N 37/30 • • containing the groups -CO-N< and , both being directly attached by their carbon atoms to the same carbon skeleton, e.g. H₂N-NH-CO-C₆H₄-COOCH₃; Thio-analogues thereof
- U A01N 47/00** **Biocides, pest repellants or attractants, or plant growth regulators containing organic compounds containing a carbon atom not being member of a ring and having no bond to a carbon or hydrogen atom, e.g. derivatives of carbonic acid (carbon tetrahalides [A01N 29/02](#))**
- U A01N 47/02 • the carbon atom having no bond to a nitrogen atom
- A01N 47/04 • • containing >N-S-C≡(Hal)₃ groups
- U A01N 47/08 • the carbon atom having one or more single bonds to nitrogen atoms
- A01N 47/10 • • Carbamic acid derivatives, i.e. containing the group -O-CO-N<; Thio analogues thereof
- A01N 47/12 • • • containing a -O-CO-N< group, or a thio analogue thereof, neither directly attached to a ring nor the nitrogen atom being a member of a heterocyclic ring
- A01N 47/18 • • • containing a -O-CO-N< group, or a thio analogue thereof, directly attached to a heterocyclic or cycloaliphatic ring
- A01N 47/28 • • Ureas or thioureas containing the groups >N-CO-N< or >N-CS-N< (isoureas, isothiureas [A01N 47/42](#))
- A01N 47/30 • • • Derivatives containing the group >N-CO-N aryl or >N-CS-N-aryl
- A01N 47/32 • • • containing >N-CO-N< or >N-CS-N< groups directly attached to a cycloaliphatic ring
- A01N 47/36 • • • containing the group >N-CO-N< directly attached to at least one heterocyclic ring; Thio analogues thereof
- A01N 47/38 • • • containing the group >N-CO-N< where at least one nitrogen atom is part of a heterocyclic ring; Thio analogues thereof
- U A01N 47/40 • the carbon atom having a double or triple bond to nitrogen e.g. cyanates, cyanamides (inorganic cyanamides [A01N 59/24](#))
- A01N 47/48 • • containing -S-C<(triple bond)≡N groups ([A01N 43/00](#) to [A01N 47/38](#) take precedence)

Project: N/A (A23G)

A23G

COCOA; COCOA PRODUCTS, e.g. CHOCOLATE; SUBSTITUTES FOR COCOA OR COCOA PRODUCTS; CONFECTIONERY; CHEWING GUM; ICE-CREAM; PREPARATION THEREOF

NOTES

1. In this subclass, the following term is used with the meaning indicated:

- "ice-cream" includes any edible frozen or congealed semi-liquid or pasty substance, e.g. slush ice

2. In this subclass, subject matter which cannot be completely classified in a single one of the main groups should be classified in each relevant main group

3. The classification symbols of groups:

[A23G 1/305](#), [A23G 1/56](#), [A23G 3/343](#), [A23G 3/346](#), [A23G 4/062](#), [A23G 9/322](#) and [A23G 9/52](#)

can be followed by additional symbols preceded by the sign "+", e.g. [A23G 1/56 +D8](#). The symbols give further information concerning structure, composition or form and have the meaning as listed below:

D . Containing organic compounds

D2 .. containing micro-organisms, enzymes

D4 .. containing vitamins, antibiotics

D6 .. containing beet sugar or cane sugar if specifically mentioned; containing other carbohydrates, e.g. starches, gums, alcohol sugar, polysaccharides, dextrans

D8 .. containing cocoa fat if specifically mentioned; containing products of cocoa fat; containing other fats, e.g. fatty acid, fatty alcohol, their esters, lecithin, paraffins

~~D10~~**D10** .. containing amino-acids, proteins, e.g. gelatine, polypeptides

D12 .. containing dairy products

D14 .. containing fruits, nuts, e.g. almonds, seeds, plants or their extracts (gums **D6**)

F . Containing inorganic compounds

H . Products with special structure

H2 .. foamed, gas-expanded or cellular products

H4 .. products with a supported structure

H4D ... products with an inedible support, e.g. a stick

H4F ... products with an edible support, e.g. a cornet

H6 .. products with a composite structure, e.g. laminated products

H8 .. hollow products, e.g. with inedible or edible filling, fixed or movable within the cavity

Project: N/A (A61K)

U A61K 31/00

Medicinal preparations containing organic active ingredients

NOTES

1. When classifying in groups [A61K 31/00](#) to [A61K 41/00](#) the symbol [A61K 2300/00](#) may be added, using Combination Sets, to indicate a mixture of active ingredients.

2. In the preparation of new organic compounds and their use in medicinal preparations, classification is only made in the relevant subclasses [C07C](#) to [C07J](#) according to the type of compound. However, the inventions dealing with medicinal preparations containing at least two active organic ingredients are

always classified in this group in addition to the classification for the type of compounds in [C07C](#) to [C07J](#).

3. Attention is drawn to the notes in class [C07](#), particularly to the definition of steroids given in Note (1) following the title of [C07J](#) and to the definition of carbohydrates and sugars given in the notes following the title of [C07H](#).

4. Salts and complexes of organic active compounds are always classified according to the free active compounds. If a complex is formed between two or more active compounds, then they are classified according to all compounds forming the salts or complexes followed by the symbol [A61K 2300/00](#) (i.e. as a mixture of active organic compounds). According to the last place rule, organic active compounds forming salts with heavy metals should be classified in [A61K 33/24](#) to [A61K 33/38](#) and not in subgroups [A61K 31/28](#) to [A61K 31/32](#), [A61K 31/555](#) or [A61K 31/714](#).

This does not apply to complexes, as apparent from the [A61K 31/00](#) scheme, wherein the complexes hemin and hematin are classified in [A61K 31/555](#) and cyanocobalamin in [A61K 31/714](#).

5. From January 2003 onwards, the EPO copies into CPC the IPC classification of the first document received (family representative). However, blends of active ingredients receive the additional symbol [A61K 2300/00](#) as Combination Set.

- U A61K 31/13 • Amines {([A61K 31/04](#) takes precedence)}
- A61K 31/15 • • Oximes (>C=N-O-); Hydrazines (>N-N<); Hydrazones (>N-N=) {Imines (C-N=C)}
- A61K 31/155 • • Amidines (-N=C-N- $\begin{array}{c} | \\ -N=C-N< \end{array}$), e.g. guanidine (H₂N-C(=NH)-NH₂), isourea (N=C(OH)-NH₂), isothiurea (-N=C(SH)-NH₂)

Project: N/A (A63B)

A63B 21/00

Exercising apparatus for developing or strengthening the muscles or joints of the body by working against a counterforce, with or without measuring devices (electric or electronic controls therefor [A63B 24/00](#); measuring muscular strength [A61B 5/22](#))

NOTE

In this subclass, the following terms or expressions are used with the meaning indicated:

- "resistance" and "resistance force" are often used in the art as synonyms for "counterforce";
- "interface with the user" covers the part of the apparatus, on which the user **directory** *directly* applies his force

Project: RP0315 (A63B)

M A63B 43/00

Balls with special arrangements {(heavy throwing balls, medicine balls and the like [A63B 65/06](#))}

M A63B 47/00

Devices for handling or treating balls {, e.g. for holding *or carrying* balls (~~holders for golf balls [A63B 57/20](#)~~)}

WARNING

Group [A63B 47/00](#) is impacted by reclassification into group [A63B 57/20](#).

Groups [A63B 47/00](#) and [A63B 57/20](#) should be considered in order to perform a complete search.

M A63B 67/00

Miscellaneous sporting games *Sporting games or accessories therefor, not provided for in groups [A63B 1/00](#) - [A63B 65/00](#)*

- C A63B 67/18
- Badminton, shuttlecock, or like games with feathered missiles
- WARNING**
Group [A63B 67/18](#) is impacted by reclassification into groups [A63B 67/183](#), [A63B 67/187](#), [A63B 67/19](#), [A63B 67/193](#), and [A63B 67/197](#). All groups listed in this Warning should be considered in order to perform a complete search.
- N A63B 67/183
- Feathered missiles
- WARNING**
Group [A63B 67/183](#) is incomplete pending reclassification of documents from group [A63B 67/18](#). Groups [A63B 67/18](#) and [A63B 67/183](#) should be considered in order to perform a complete search.
- N A63B 67/187
- Shuttlecocks
- WARNING**
Group [A63B 67/187](#) is incomplete pending reclassification of documents from group [A63B 67/18](#). Groups [A63B 67/18](#) and [A63B 67/187](#) should be considered in order to perform a complete search.
- N A63B 67/19
- with several feathers connected to each other
- WARNING**
Group [A63B 67/19](#) is incomplete pending reclassification of documents from group [A63B 67/18](#). Groups [A63B 67/18](#) and [A63B 67/19](#) should be considered in order to perform a complete search.
- N A63B 67/193
- with all feathers made in one piece
- WARNING**
Group [A63B 67/193](#) is incomplete pending reclassification of documents from group [A63B 67/18](#). Groups [A63B 67/18](#) and [A63B 67/193](#) should be considered in order to perform a complete search.
- N A63B 67/197
- with special functions, e.g. light emission or sound generation
- WARNING**
Group [A63B 67/197](#) is incomplete pending reclassification of documents from group [A63B 67/18](#). Groups [A63B 67/18](#) and [A63B 67/197](#) should be considered in order to perform a complete search.

Project: RP0314 (B22F)

- U B22F 3/00
- Manufacture of workpieces or articles from metallic powder characterised by the manner of compacting or sintering; Apparatus specially adapted therefor; {Presses and furnaces}**
- M B22F 3/115
- by spraying molten metal, i.e. spray sintering, spray casting-~~{also classified in C23C 4/121, C23C 4/185}~~

Project: MP0262 (B31C)

- M B31C MAKING WOUND ARTICLES, e.g. WOUND TUBES, OF PAPER OR CARDBOARD (~~characteristics relating to the working of plastics B29; shaping of plastics or substances in a plastic state B29C~~)
- NOTE
The term "winding" in this subclass means forming two or more complete convolutions.
- M B31C 7/00 Forming conical articles of paper or cardboard by winding (~~winding blanks B31B~~)
- M B31C 9/00 Simultaneous forming of cylindrical and conical shapes by winding separate webs, e.g. forming bottles (~~winding blanks B31B~~)

Project: MP0262 (B31D)

- M B31D MAKING ARTICLES OF PAPER OR CARDBOARD NOT PROVIDED FOR IN SUBCLASSES [B31B](#) OR [B31C](#) (manufacture by dry processes of articles made from particles or fibres consisting of wood or other lignocellulosic or like organic material [B27N](#); making layered products not composed wholly of paper or cardboard [B32B](#); ~~making cardboard or paper D21F, D21H~~; making articles from cellulosic fibrous suspensions, e.g. wood pulp, [D21J](#))
- U B31D 1/00 Multiple-step processes for making flat articles; {Making flat articles}
- M B31D 1/02 ~~the articles being labels or tags (means and processes for attaching threads D05)~~
- NOTE
Attaching threads to labels or tags is classified in group [B31D 1/02](#), e.g. [B31D 1/023](#)
- M B31D 5/00 Multiple-step processes for making three-dimensional articles ~~{; {Making three-dimensional articles}(assembly {or manufacture} of garlands A41G 1/04; making receptacles or containers B31B; making tubes B31B, B31C)~~
- NOTE
Making drinking straws is classified in group [B31D 5/00](#), e.g. [B31D 5/0095](#)

Project: N/A (B31F)

- B31F MECHANICAL WORKING OR DEFORMATION OF PAPER OR CARDBOARD (~~cutting, trimming, in general B26; incising, scoring, in general B26D 3/08; making layered products not composed wholly of paper or cardboard B32B; multi-ply material of paper or cardboard, its manufacture D21H~~)
- B31F 1/00 Mechanical deformation of paper or cardboard without removing material ~~including combined deformation and, e.g. in combination with~~ laminating (~~embossing combined with application of ink, type marking presses, selective embossing machines B41F, B41J, B41K, B41M; machines or apparatus for embossing decorations or marks B44B 5/00; artists hand tools for embossing B44B 11/04; producing decorative effects by processes for stamping ornamental designs on surfaces B44C 1/24; mechanical deformation during paper or board making, kinds of paper or board D21~~)

- B31F 1/07
- Embossing; ~~{~~, i.e. producing impressions formed by locally deep-drawing, e.g. using rolls provided with complementary profiles~~}~~~~{~~~~(~~~~B31F 1/128~~ takes precedence;~~)~~~~}~~ corrugating [B31F 1/20](#); *embossing in combination with printing* [B41F 19/02](#), [B41M 1/24](#); *typewriters for embossing* [B41J 3/38](#); *stamping in combination with deforming* [B41K 3/36](#))
- B31F 1/20
- Corrugating; Corrugating combined with laminating to other paper or cardboard layers ~~(~~~~corrugating sheet metal~~ [B21D 13/00](#); ~~corrugating plastics material~~ [B29C 53/22](#); ~~corrugating veneer~~ [B27D](#))
- B31F 5/00
- ~~Attaching together paper or cardboard sheets, strips, or webs; Attaching together paper or cardboard sheets, strips or webs {or other preformed paper articles (or other preformed paper articles joining by rim-rolling~~ [B31F 1/0041](#), [B31F 1/009](#); ~~joining by rim-rolling~~ [B31F 1/0041](#), [B31F 1/009](#); ~~closing tube ends by inserting an element~~ [B31F 1/008](#), ~~making boxes~~ [B31B](#)) ~~Reinforcing edges of paper or cardboard (means for applying adhesive or glue~~ [B05C](#); ~~stapling in box or like making~~ [B31B](#); ~~attaching the replacement web to the expiring web during web-roll changing~~ [B65H 19/18](#); ~~apparatus for splicing webs during handling~~ [B65H 21/00](#)); *Reinforcing edges of paper or cardboard*

Project: RP0299 (B60W)

- M B60W 20/00
- ~~Control systems specially adapted for hybrid vehicles, i.e. vehicles having two or more prime movers of more than one type, e.g. electrical and internal combustion motors, all used for propulsion of the vehicle~~
- NOTE
- Classification is also made in [B60K 6/42](#) for the different types of hybrid electric vehicles
- M B60W 20/10
- ~~{~~controlling *Controlling* the power contribution of each of the prime movers to meet required power demand~~}~~
- D B60W 20/102
- ~~{~~using model predictive control [MPC] strategies, i.e. control methods based on models predicting performance~~}~~
- D B60W 20/104
- ~~{~~using control strategies considering route information~~}~~
- D B60W 20/106
- ~~{~~in order to stay within battery power input and output limits or to prevent overcharging or over-discharging~~}~~
- D B60W 20/1062
- • ~~{~~in conjunction with braking regeneration~~}~~
- D B60W 20/108
- • ~~{~~Special control strategies to achieve a particular effect~~}~~
- D B60W 20/1082
- • • ~~{~~Control strategies to reduce engine exhaust emissions~~}~~
- D B60W 20/1084
- • • ~~{~~Control strategies to reduce noise~~}~~
- D B60W 20/1086
- • • ~~{~~Control strategies to avoid aging of fuel~~}~~
- D B60W 20/1088
- • • ~~{~~Control strategies to achieve boost-effect~~}~~
- N B60W 20/11
- • *using model predictive control [MPC] strategies, i.e. control methods based on models predicting performance*
- N B60W 20/12
- • *using control strategies taking into account route information*
- N B60W 20/13
- • *in order to stay within battery power input or output limits; in order to prevent overcharging or battery depletion*
- N B60W 20/14
- • • *in conjunction with braking regeneration*
- N B60W 20/15
- • *Control strategies specially adapted for achieving a particular effect*
- N B60W 20/16
- • • *for reducing engine exhaust emissions*
- N B60W 20/17
- • • *for noise reduction*
- N B60W 20/18
- • • *for avoiding ageing of fuel*

- N B60W 20/19 . . . for achieving enhanced acceleration
- M B60W 20/20 . {Control strategies including involving selection of hybrid configuration, e.g. selection between series or parallel configuration}
- M B60W 20/30 . {Control strategies including involving selection of transmission gear ratio}
- M B60W 20/40 . {controlling Controlling the transition between engagement or disengagement of prime movers, i.e.e.g. engaging or disengaging a for transition between prime mover} movers
- M B60W 20/50 . {Control strategies for responding to system failures, e.g. for fault diagnosis, failsafe operation or limp home mode}

Project: MP0263 (B65B)

- M B65B 59/00 Arrangements to enable machines to handle articles of different sizes, to produce packages of different sizes, to vary the contents of packages, or to give access for cleaning or maintenance purposes

Project: N/A (C07C)

- U C07C 45/00 Preparation of compounds having >C = O groups bound only to carbon or hydrogen atoms; Preparation of chelates of such compounds
- U C07C 45/27 . by oxidation (with ozone C07C 45/40)
- U C07C 45/32 . . with molecular oxygen
- C07C 45/37 . . . of >C-O-functional groups to >C=O groups
- U C07C 245/00 Compounds containing chains of at least two nitrogen atoms with at least one nitrogen-to-nitrogen multiple bond (azoxy compounds C07C 291/08)
- C07C 245/12 . Diazo compounds, i.e. compounds having the free valencies of =>N₂ groups attached to the same carbon atom

Project: N/A (C07F)

- U C07F 9/00 Compounds containing elements of the 5th Group of the Periodic System
- U C07F 9/02 . Phosphorus compounds (sugar phosphates C07H 11/04; nucleotides C07H 19/00, C07H 21/00; nucleic acids C07H 21/00)
- U C07F 9/28 . . with one or more P-C bonds
- C07F 9/46 . . . Phosphinous acids R₂-P-OH; Thiophosphinous acids; Aminophosphines R₂-P-NH₂ {including R₂P(=O)H; derivatives thereof}
- C07F 9/48 . . . Phosphonous acids RPR-P(OH)₂; Thiophosphonous acids {including RHP(=O)(OH); Derivatives thereof}

Project: N/A (C08K)

- U C08K 5/00 Use of organic ingredients
- U C08K 5/49 . Phosphorus-containing compounds {(C08K 5/0091 takes precedence)}
- U C08K 5/51 . . Phosphorus bound to oxygen
- U C08K 5/53 . . . bound to oxygen and to carbon only
- C08K 5/5313 Phosphinic compounds, e.g. R₂=P(:O)OR'
- C08K 5/5317 Phosphonic compounds, e.g. R-P(:O)(OR')₂

Project: RP0314 (C23C)

- M C23C 4/00** Coating by spraying the coating material in the molten state, e.g. by flame, plasma or electric discharge (**spraying guns B05B; making alloys containing fibres or filaments by thermal spraying of metal C22C 47/16; plasma guns H05H build-up welding B23K, e.g. B23K 5/18, B23K 9/04**)
- D C23C 4/005 · {Pattern or selective deposit without pre-treatment of the material to be coated}
- N C23C 4/01 · *Selective coating, e.g. pattern coating, without pre-treatment of the material to be coated*
- U C23C 4/04 · characterised by the coating material
- M C23C 4/06 · · Metallic material ~~{e.g. mixture of metallic alloys and hard particles like SiC and WC (C23C 4/085 takes precedence)}~~
- D C23C 4/065 · · · {containing non-metal elements, e.g. C, Si, B, P or As, as free particles}
- N C23C 4/067 · · · *containing free particles of non-metal elements, e.g. carbon, silicon, boron, phosphorus or arsenic*
- N C23C 4/073 · · · *containing MCrAl or MCrAlY alloys, where M is nickel, cobalt or iron, with or without non-metal elements*
- M C23C 4/08 · · · containing only metal elements **(C23C 4/073 takes precedence)**
- D C23C 4/085 · · · · {MCrAl or MCrAlY type alloys where M = Ni, Co, Fe}
- M C23C 4/10 · · Oxides, borides, carbides, nitrides, ~~silicides~~ or ~~mixtures thereof~~ **silicides; Mixtures thereof**
- D C23C 4/105 · · · {Oxides}
- N C23C 4/11 · · · Oxides
- M C23C 4/12 · characterised by the method of spraying
- NOTE**
In this group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its subgroups should be classified in each of those subgroups.
- D C23C 4/121 · · {Spraying molten metal}
- D C23C 4/122 · · {utilising detonation (apparatus for spraying by means of detonations in general B05B 7/0006)}
- N C23C 4/123 · · *Spraying molten metal*
- D C23C 4/124 · · {utilising flame spraying (apparatus for spraying by means of flame in general B05B 7/20)}
- D C23C 4/125 · · {utilising wire arc spraying (apparatus for spraying by means of electric arc in general B05B 7/22)}
- N C23C 4/126 · · *Detonation spraying*
- D C23C 4/127 · · {utilising plasma spraying (plasma torches in general H05H 1/26, apparatus for spraying by means of electric arc in general B05B 7/22)}
- D C23C 4/128 · · {Spraying in vacuum or in an inert gas chamber}
- N C23C 4/129 · · *Flame spraying*
- N C23C 4/131 · · *Wire arc spraying*
- N C23C 4/134 · · *Plasma spraying*
- N C23C 4/137 · · *Spraying in vacuum or in an inert atmosphere*
- M C23C 4/14 · · for ~~covering elongated~~ **coating elongate** material

Project: RP0030 (E21D)**M E21D**

SHAFTS; TUNNELS; GALLERIES; LARGE UNDERGROUND CHAMBERS (soil-conditioning or soil-stabilising materials [C09K 17/00](#); drilling or cutting machines for mining or quarrying [E21C](#); safety devices, transport, rescue, ventilation or drainage [E21F](#))

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

~~E21D 9/01~~ covered by ~~E21D 9/00~~

~~E21D 9/087~~ covered by ~~E21D 9/00~~

~~E21D 9/093~~ covered by ~~E21D 9/00~~

[E21D 13/02](#) covered by [E21D 13/00](#)

[E21D 13/04](#) covered by [E21D 13/00](#)

[E21D 15/582](#) covered by [E21D 15/58](#)

[E21D 15/59](#) covered by [E21D 15/44](#), [E21D 15/58](#)

[E21D 17/022](#) covered by [E21D 17/02](#)

[E21D 17/05](#) covered by [E21D 17/0206](#), [E21D 17/04](#)

[E21D 17/054](#) covered by [E21D 17/04](#)

[E21D 19/06](#) covered by [E21D 19/02](#), [E21D 19/04](#)

U E21D 9/00

Tunnels or galleries, with or without linings; Methods or apparatus for making thereof ([E02D 29/045](#), [E02D 29/063](#) take precedence; linings per se [E21D 11/00](#)); Layout of tunnels or galleries

- U E21D 9/006
 - {by making use of blasting methods (explosive compositions [C06B](#); blasting per se [F42](#))}
- D E21D 9/007
 - {Methods or devices for restoring the cross-section of tunnels, e.g. by equalising the floor}
- D E21D 2009/008
 - {Driving transverse tunnels starting from existing tunnels}
- N E21D 9/008
 - {Driving transverse tunnels starting from existing tunnels}
- N E21D 9/01
 - Methods or apparatus for enlarging or restoring the cross-section of tunnels, e.g. by restoring the floor to its original level
- U E21D 9/02
 - Driving inclined tunnels or galleries
- N E21D 9/03
 - {Driving non-circular tunnels}
- U E21D 9/04
 - Driving tunnels or galleries through loose materials; Apparatus therefor not otherwise provided for {([E21D 9/005](#), [E21D 9/06](#) take precedence; soil improvement [E21D 9/001](#); provisional protective covers [E21D 19/04](#))}
- U E21D 9/06
 - Making by using a driving shield, {i.e. advanced by pushing means bearing against the already placed lining (pushing prefabricated elements through the ground from an access pit [E21D 9/005](#))}
- M E21D 9/0607
 - {the shield being provided with devices for lining the tunnel, e.g. shuttering (~~E21D 9/082~~[E21D 9/0873](#), ~~E21D 9/087~~[E21D 9/0879](#) take precedence; tail sealing means used as end shuttering [E21D 9/0635](#))}
- N E21D 9/0609
 - • {with means for applying a continuous liner, e.g. sheets of plastics, between the main concrete lining and the rock}
- D E21D 2009/0614
 - • {with means for applying a continuous liner, e.g. sheets of plastics, between the main concrete lining and the rock}

- U E21D 9/0621 . . {Shield advancing devices}
 - D E21D 9/0628 . . {Control of the shields, e.g. of the hydraulic advancing cylinders (arrangement of measuring or indicating devices for use during driving of tunnels E21D 9/003)}
 - U E21D 9/0635 . . {Tail sealing means, e.g. used as end shuttering}
 - D E21D 2009/0642 . . {the shield having means for additional processing at the front end}
 - N E21D 9/0642 . . {the shield having means for additional processing at the front end}
 - D E21D 2009/065 . . . {with devices for provisionally supporting the front face}
 - N E21D 9/065 . . . {with devices for provisionally supporting the front face}
 - D E21D 2009/0657 . . . {structurally associated with rock crushers}
 - N E21D 9/0657 . . . {structurally associated with rock crushers}
 - D E21D 2009/0664 . . . {with means for applying a coating layer to the front face, e.g. by spraying}
 - N E21D 9/0664 . . . {with means for applying a coating layer to the front face, e.g. by spraying}
 - D E21D 2009/0671 . . . {with means for consolidating the rock in front of the shield by injection of consolidating substances through boreholes}
 - N E21D 9/0671 . . . {with means for consolidating the rock in front of the shield by injection of consolidating substances through boreholes}
 - D E21D 2009/0678 . . . {Adding additives, e.g. chemical compositions, to the slurry or the cuttings (bentonite shall not be coded)}
 - N E21D 9/0678 . . . {Adding additives, e.g. chemical compositions, to the slurry or the cuttings}
- NOTE
When classifying in this group, bentonite shall not be classified
- D E21D 2009/0685 {Foaming agents}
 - N E21D 9/0685 {Foaming agents}
 - U E21D 9/08 . . with additional boring or cutting means {other than the conventional cutting edge of the shield}
 - D E21D 9/081 . . . {with a rotary drilling head cutting simultaneously the whole front face}
 - D E21D 9/082 {the shield being provided with devices for lining the tunnel, e.g. shuttering}
 - D E21D 2009/084 {with rotary drilling heads having variable diameter}
 - D E21D 9/085 . . . {with a movable support arm carrying cutting tools for attacking the front face, e.g. a bucket}
 - E21D 9/087 ~~{the shield being provided with devices for lining the tunnel, e.g. shuttering}~~ full-face machines a rotary drilling head cutting simultaneously the tunnel whole cross-section, e.g.i.e.
 - N E21D 9/0873 {the shield being provided with devices for lining the tunnel, e.g. shuttering}
 - N E21D 9/0874 . . . {with rotary drilling heads having variable diameter}
 - N E21D 9/0875 . . . {with a movable support arm carrying cutting tools for attacking the front face, e.g. a bucket}
 - N E21D 9/0879 {the shield being provided with devices for lining the tunnel, e.g. shuttering}
 - D E21D 2009/088 . . . {for driving non-circular tunnels}
 - N E21D 9/093 . . Control of the driving shield {, e.g. of the hydraulic advancing cylinders (arrangement of measuring or indicating devices for use during driving of tunnels E21D 9/003)}

- U E21D 11/00** **Lining tunnels, galleries or other underground cavities, e.g. large underground chambers; Linings therefor; Making such linings in situ, e.g. by assembling (E21D 15/00 to E21D 23/00 take precedence; specially for shafts E21D 5/00; {driving shields in combination with means for lining the tunnel E21D 9/06}; lining pressure water galleries, linings therefor E02B 9/06)**
- U E21D 11/04 · Lining with building materials (E21D 11/02, E21D 11/14 take precedence; {compositions of mortars, concrete or like building materials C04B; placing filling-up materials in underground workings E21F 15/00})
- U E21D 11/08 · · with preformed concrete slabs {(backfilling the space between the slabs and the rock E21D 11/105)}
- U E21D 11/083 · · · {Methods or devices for joining adjacent concrete segments}
- D E21D 2011/086 · · · {Making of concrete lining segments}
- N E21D 11/086 · · · {Methods of making concrete lining segments}
- U E21D 11/38 · Waterproofing (in general E02D 31/00); Heat insulating; Soundproofing; Electric insulating (for building constructions in general E04B 1/62)
- U E21D 11/385 · · {Sealing means positioned between adjacent lining members (for joints in foundation structures E02D 29/16; for sewers E03F 3/04; for building structures in general E04B 1/68)}
- D E21D 2011/386 · · · {inflatable}
- N E21D 11/386 · · · {inflatable sealing means}
- D E21D 2011/388 · · · {having longitudinal cavities communicating with the exterior on the outer side of the lining elements}
- N E21D 11/388 · · · {having longitudinal cavities communicating with the exterior on the outer side of the lining elements}
- U E21D 11/40 · Devices or apparatus specially adapted for handling or placing units of linings {or supporting units} for tunnels or galleries {(combined with tunnelling shields E21D 9/06)}
- U E21D 11/403 · · {combined with the head machine}
- D E21D 2011/406 · · {Placing endless lining elements, e.g. from reels (in combination with a tunnelling shield E21D 2009/0614)}
- N E21D 11/406 · · {Placing endless lining elements, e.g. from reels (in combination with a tunneling shield E21D 9/0609)}
- U E21D 15/00** **Props (in the building art E04G 25/00); Chocks, {e.g. made of flexible containers filled with backfilling material}**
- U E21D 15/58 · Devices for setting props or chocks
- U E21D 15/581 · · {in which the props are pre- loaded (extensible elements at strut extremities E21D 15/52)}
- N E21D 15/5813 · · · {by means of power accumulators to be pre-charged by rock pressure (by means of hydraulically operated devices E21D 15/587)}
- N E21D 15/5817 · · · {in which the lock is also activated}
- D E21D 15/582 · · · {by means of power accumulators to be pre-charged by rock pressure (by means of hydraulically operated devices E21D 15/587)}
- D E21D 15/583 · · · {in which the lock is also activated}
- U E21D 21/00** **Anchoring-bolts for roof, floor {in galleries or longwall working}, or shaft-lining protection ({ground anchors E02D 5/80; anchorings for building constructions E04B 1/41, E21D 21/00}; dowels or other devices fastened in walls or the like by inserting them in holes made therein for that purpose F16B 13/00; {bolts with visible load G01L 1/00})**

- U E21D 21/0026 · {characterised by constructional features of the bolts}
- U E21D 21/0046 · · {formed by a plurality of elements arranged longitudinally}
- D E21D 2021/0053 · · {Anchoring-bolts in the form of lost drilling rods}
- N E21D 21/0053 · · {Anchoring-bolts in the form of lost drilling rods}
- D E21D 2021/006 · · {Anchoring-bolts made of cables or wires}
- N E21D 21/006 · · {Anchoring-bolts made of cables or wires}
- D E21D 2021/0066 · · {Anchoring-bolts formed by a bundle of radially arranged rigid elements}
- N E21D 21/0066 · · {Anchoring-bolts formed by a bundle of radially arranged rigid elements}
- D E21D 2021/0073 · · {Anchoring-bolts having an inflatable sleeve, e.g. hollow sleeve expanded by a fluid}
- N E21D 21/0073 · · {Anchoring-bolts having an inflatable sleeve, e.g. hollow sleeve expanded by a fluid}

- U E21D 23/00 Mine roof supports for step- by- step movement, e.g. in combination with provisions for shifting of conveyers, mining machines, or guides therefor ({transport of mine roof support units [E21F 13/008](#); } shifting of mine conveyers at the working face [E21F 13/08](#))**
- U E21D 23/12 · Control, e.g. using remote control ([E21D 23/16](#) takes precedence)
- U E21D 23/14 · · Effecting automatic sequential movement of supports, e.g. one behind the other {(advancing of mining machines toward the working face [E21C 29/02](#); advancing of conveyers toward the working face [E21D 23/085](#))}
- D E21D 2023/142 · · · {Measuring the advance of support units with respect to external points of reference}
- N E21D 23/142 · · · {Measuring the advance of support units with respect to external points of reference}
- D E21D 2023/144 · · · {Measuring the advance of support units with respect to internal points of reference, e.g. with respect to neighbouring support units or extension of a cylinder}
- N E21D 23/144 · · · {Measuring the advance of support units with respect to internal points of reference, e.g. with respect to neighboring support units or extension of a cylinder}
- D E21D 2023/146 · · · {Transmission of signals and commands by cable}
- N E21D 23/146 · · · {Transmission of signals and commands by cable}
- D E21D 2023/148 · · · {Wireless transmission of signals and commands}
- N E21D 23/148 · · · {Wireless transmission of signals or commands}

Project: RP0303 (F16J)

- M F16J 9/00 Piston-rings; {, e.g. non-metallic piston-rings}, seats therefor; Ring sealings of similar construction ~~in general~~ (other sealings between pistons and cylinders [F16J 3/06](#), [F16J 15/16](#) {; {manufacture of piston-rings [B23P 15/06](#), [B23P 15/08](#)}; tools for mounting or removing piston-rings or the like [B25B](#); piston sealing arrangements on brake master cylinders [B60T 11/236](#) {; {sealing provided on pump pistons [F04B 53/143](#))**
- M F16J 15/00 Sealings (sealing arrangements for vehicle windows, windscreens, non-fixed roofs, doors, or similar devices [B60J 10/00](#); sealing or packing elements for container closures [B65D 53/00](#); sealing arrangements in rotary-piston machines or engines [F01C 19/00](#); sealings in non-positive-displacement machines or engines [F01D 11/00](#); arrangements of sealings in combustion engines [F02F 11/00](#); sealing arrangements in rotary-piston pumps [F04C 27/00](#); sealing lead-in or lead-through insulators [H01B 17/30](#))**

- M F16J 15/16
 - between relatively-moving surfaces ([F16J 15/50](#), [F16J 15/52](#) take precedence; bellows pistons [F16J 3/06](#); piston-rings or ring *sealing sealings* of similar construction *in-general* [F16J 9/00](#); *spindle sealings for valves* [F16K 41/00](#))
- M F16J 15/32
 - • with elastic *sealing lip* *{with elastic sealing sealings}*, e.g. "O"-ring-rings; ([F16J 15/34](#) takes precedence)
- M F16J 15/3204
 - • • {with at least one lip}
- M F16J 15/3208
 - • • • {provided with a spring-tension element} *elements, e.g. elastic rings*
- M F16J 15/3212
 - • • • • {with a metal spring} *springs*
- M F16J 15/3216
 - • • • • {supported in a direction parallel to the surfaces}
- M F16J 15/322
 - • • • • {supported in a direction *perpendicularly perpendicular* to the surfaces}
- M F16J 15/3224
 - • • • • {*protected against capable of accommodating* changes in distances *or misalignment* between the surfaces}, e.g. *able to compensate for defaults of eccentricity or angular deviations*
- M F16J 15/3228
 - • • • • {formed by deforming a flat *annular*-ring}
- M F16J 15/3232
 - • • • • {with a plurality of *having two or more* lips ([F16J 15/3208](#) to [F16J 15/3228](#) take precedence)}
- M F16J 15/3236
 - • • • • • {with at least one lip for each surface, *i.e.e.g.* "U"-cup packings}
- M F16J 15/324
 - • • • {*Details relating to Arrangements for* lubrication or cooling of the sealing itself (*in-general* [F16J 15/162](#))}
- M F16J 15/3244
 - • • • {with *hydro-dynamic hydrodynamic* pumping action}
- M F16J 15/3248
 - • • • {provided with a casing} *casings or supports*
- M F16J 15/3252
 - • • • • {with a rigid casing} *casings or supports*
- M F16J 15/3256
 - • • • • • {comprising two *casing or support* elements *fixed respectively on, one attached to* each surface}, e.g. *cartridge or cassette seals*
- M F16J 15/326
 - • • • • • • {with means for detecting *the or measuring* relative rotation of the two elements}
- M F16J 15/3264
 - • • • • • • • {the elements being separable} *from each other*
- M F16J 15/3268
 - • • • • {Mounting of sealing lips} *rings*
- M F16J 15/3272
 - • • • • • {*The sealing the rings* having a break *or opening*, e.g. *permitting the radial to enable* mounting *around on* a shaft} *otherwise than from a shaft end*
- M F16J 15/3276
 - • • • • {*Static with additional static* sealing *round between* the *fixation sealing, or its casing or support, and the surface* on *one of the surfaces*} *which it is mounted*
- M F16J 15/328
 - • • • {*Special Manufacturing* methods *specially adapted* for *making*-elastic sealings (*moulding or like operations, see the relevant classes* [moulding B29C](#))}
- M F16J 15/3284
 - • • • • {*Structural composition characterised by their structure*; *-Use Selection* of *special* materials}
- M F16J 15/3288
 - • • • • {Filamentary structures, e.g. brush seal} *seals*
- M F16J 15/3292
 - • • • • {Lamellar structures}
- M F16J 15/3296
 - • • • • {*Measuring Arrangements for monitoring the condition* or *controlling* equipment *specially adapted for operation of* elastic sealings (*measuring in general* [G01](#); *Controlling in general* [G05](#) [F16J 15/326](#) takes precedence); *Arrangements for control of elastic sealings, e.g. of their geometry or stiffness*

Project: RP0310 (F21S)

- U F21S 2/00
 - Systems of lighting devices, not provided for in main groups [F21S 4/00](#) to [F21S 10/00](#) or [F21S 19/00](#), e.g. of modular construction

- U F21S 2/005 · {of modular construction}
- U F21S 4/00** **Lighting devices or systems using a string or strip of light sources**
- D F21S 4/001 · {using a string of light sources, i.e. lighting devices or systems where the light sources are supported by loose electric cables, e.g. Christmas tree lights}
- D F21S 4/002 · · {the strings forming a grid, net or web structure}
- D F21S 4/003 · {using a strip of light sources, i.e. lighting devices or systems where the light sources are supported on a linear support}
- D F21S 4/005 · · {the lighting device being flexible or deformable, e.g. into a curved shape}
- D F21S 4/006 · · · {the lighting device being a LED tape}
- D F21S 4/007 · · · {the lighting device being a LED rope light}
- D F21S 4/008 · · {the lighting device being rigid or comprising an elongated rigid housing, e.g. LED bars}
- N F21S 4/10 · with light sources attached to loose electric cables, e.g. Christmas tree lights
- N F21S 4/15 · · the cables forming a grid, net or web structure
- N F21S 4/20 · with light sources held by or within elongate supports
- N F21S 4/22 · · flexible or deformable, e.g. into a curved shape
- N F21S 4/24 · · · of ribbon or tape form, e.g. LED tapes
- N F21S 4/26 · · · of rope form, e.g. LED lighting ropes, or of tubular form
- N F21S 4/28 · · rigid, e.g. LED bars

Project: MP0261 (F21V)

- U F21V 7/00** **Reflectors for light sources (characterised by cooling arrangements [F21V 29/505](#))**
- M F21V 7/04 · Optical design (~~F21V 7/22 takes precedence~~)
- M F21V 7/10 · Construction (~~F21V 7/22 takes precedence~~)
- U F21V 11/00** **Screens not covered by groups [F21V 1/00](#), [F21V 3/00](#), [F21V 7/00](#) or [F21V 9/00](#) (characterised by cooling arrangements [F21V 29/502](#))**
- M F21V 11/16 · using sheets without apertures, {i.e. masks for shielding light,} e.g. fixed (~~F21V 11/02, F21V 11/06 take precedence; {for vehicle head lamps F21S 48/145}~~)
- M F21V 14/00** **Changing the characteristics or distribution of the light emitted by adjustment of parts {or by interposition of elements with electrically controlled variable light transmissivity} (reflectors with provision for adjusting the curvature [F21V 7/16](#); light filters with provision for variation of colour or intensity [F21V 9/10](#); screens using **irisadjustable parallel laminae or strips, e.g. of Venetian-type diaphragmsblind type, [F21V 11/04](#); screens using iris-type diaphragms [F21V 11/10](#); screens using movable sheets without apertures, e.g. flaps or slides, [F21V 11/18](#)**; adjustable mountings for lighting devices [F21V 21/14](#))**
- M F21V 17/00** **Fastening of component parts of lighting devices, e.g. shades, globes, refractors, reflectors, filters, screens, grids or protective cages (of light sources or light holders [F21V 19/00](#); **gas-tight or water-tight arrangements [F21V 31/00](#); {for vehicle rear lights [F21S 48/20](#); for vehicle head lights [F21S 48/10](#)}**)**
- M F21V 17/02 · with provision for adjustment ([F21V 17/04](#); ~~F21V 17/06~~; {~~F21V 17/08~~} take precedence)

- U F21V 19/00** Fastening of light sources or lamp holders (fastening electric light source solely by the coupling device [H01R 33/00](#); {special means for attaching candle to candle holder [F21V 35/003](#)})
- M F21V 19/06** · *Attaching Fastening incandescent* mantles or other incandescent bodies to lamp parts; *Suspension devices for incandescent mantles or other incandescent bodies (arrangements of mantles or other incandescent bodies on burners [F21V 36/00](#))*
- U F21V 21/00** Supporting, suspending, or attaching arrangements for lighting devices ([F21V 17/00](#), [F21V 19/00](#) take precedence; arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#), stands for supporting apparatus or articles in general [F16M 11/00](#)); Hand grips
- U F21V 21/08** · Devices for easy attachment to any desired place, e.g. clip, clamp, magnet
- M F21V 21/084** · · Head fittings ~~(for medical purposes [A61B 1/06](#) {hats or helmets with lamps [A42B 3/044](#)})~~
- M F21V 21/36** · Hoisting or lowering devices, e.g. for maintenance ~~([F21V 21/14](#) takes precedence)~~
- U F21V 31/00** Gas-tight or water-tight arrangements
- M F21V 31/04** · Provision of filling media ~~(safety devices [F21V 25/00](#); cooling arrangements [F21V 29/50](#))~~
- M F21V 36/00** Arrangements of mantles or other incandescent bodies on burners ~~(attaching to lamp parts [F21V 19/06](#))~~

Project: RP0304 (H01F)

- M H01F 41/00** Apparatus or processes specially adapted for manufacturing or assembling ~~the devices covered by this subclass~~ *magnets, inductances or transformers; Apparatus or processes specially adapted for manufacturing materials characterised by their magnetic properties*
- U H01F 41/02** · for manufacturing cores, coils, or magnets ([H01F 41/14](#) takes precedence; for dynamo-electric machines [H02K 15/00](#))
- U H01F 41/04** · · for manufacturing coils {(coils for transformer or inductances [H01F 27/28](#))}
- M H01F 41/06** · · · *Winding Coil winding*
- D H01F 41/0604** · · · · {Winding sheet material}
- D H01F 41/0608** · · · · · {with insulation}
- N H01F 41/061** · · · · *Winding flat conductive wires or sheets*
- D H01F 41/0612** · · · · · {Winding wire material}
- D H01F 41/0616** · · · · · {with insulation}
- D H01F 41/062** · · · · · · {the insulation being strip material}
- D H01F 41/0625** · · · · · · {Winding more than one wire}
- D H01F 41/0629** · · · · · · {Twisting}
- N H01F 41/063** · · · · · · *with insulation*
- D H01F 41/0633** · · · · · {Devices for guiding or positioning the winding material on the winding form}
- D H01F 41/0637** · · · · · {forming pancake coils}
- N H01F 41/064** · · · · · *Winding non-flat conductive wires, e.g. rods, cables or cords*
- D H01F 41/0641** · · · · · · {positioning the winding material in a special configuration on the winding form (orthocyclic coils, open mesh coils)}
- D H01F 41/0645** · · · · · · {using revolving flyers}

- D H01F 41/065 {Winding coils of special form}
- D H01F 41/0654 {Winding on elongate winding forms}
- D H01F 41/0658 {Winding flat coils}
- N H01F 41/066 with insulation
- D H01F 2041/0662 {Winding saddle or deflection coils}
- D H01F 41/0666 {Winding with terminal wrapping or soldering; Winding while forming taps or terminals}
- D H01F 41/067 {Winding machines having a plurality of work holders or winding forms}
- D H01F 41/0675 {Turrets, turntables}
- D H01F 41/0679 {Tensioning or braking devices}
- N H01F 41/068 in the form of strip material
- D H01F 41/0683 {Dispensing or feeding devices}
- D H01F 41/0687 {Winding mandrels, winding forms}
- N H01F 41/069 Winding two or more wires, e.g. bifilar winding
- D H01F 41/0691 {Winding with deformation of the winding material section}
- D H01F 41/0695 {Winding while measuring electrical characteristics}
- N H01F 41/07 Twisting
- Q H01F 41/071 Winding coils of special form (winding conductors onto closed formers or cores [H01F 41/08](#))
- WARNING
Group [H01F 41/071](#) is impacted by reclassification of documents into group [H01F 41/08](#).
Groups [H01F 41/071](#) and [H01F 41/08](#) should be considered in order to perform a complete search.
- N H01F 2041/0711 {Winding saddle or deflection coils}
- N H01F 41/073 Winding onto elongate formers
- N H01F 41/074 Winding flat coils
- N H01F 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
- N H01F 41/077 Deforming the cross section or shape of the winding material while winding
- N H01F 41/079 Measuring electrical characteristics while winding
- E H01F 41/08 Winding conductors onto **closed formers** or **cores, e.g.** threading conductors through **cores or formers which are closed in themselves, e.g. toroids toroidal cores (for interconnecting digital storage elements G11C-5/12)**
- WARNING
Group [H01F 41/08](#) is incomplete pending reclassification of documents from group [H01F 41/071](#).
Groups [H01F 41/071](#) and [H01F 41/08](#) should be considered in order to perform a complete search.
- N H01F 41/082 Devices for guiding or positioning the winding material on the former
- N H01F 41/084 for forming pancake coils
- N H01F 41/086 in a special configuration on the former, e.g. orthocyclic coils or open mesh coils
- N H01F 41/088 using revolving flyers
- N H01F 41/09 Winding machines having two or more work holders or formers

- N H01F 41/092 Turrets; Turntables
- N H01F 41/094 Tensioning or braking devices
- N H01F 41/096 Dispensing or feeding devices
- N H01F 41/098 Mandrels; Formers

Project: MP0257 (H01T)

- M H01T **SPARK GAPS; OVERVOLTAGE ARRESTERS USING SPARK GAPS; SPARKING PLUGS; CORONA DEVICES; GENERATING IONS TO BE INTRODUCED INTO NON-ENCLOSED GASES (~~working of metal by the action of a high concentration of electric current B23H; welding, e.g. arc welding, electron beam welding or electrolytic welding B23K; gas-filled discharge tubes with solid cathode H01J 17/00; electric arc lamps H05B 31/00~~ **overvoltage protection circuits H02H**)**
- NOTE
- In this subclass, the term "spark gaps" is used with the following meaning:
- enclosed or non-enclosed discharge device having cold electrodes and used exclusively to discharge a quantity of electrical energy in a small time duration.
- U H01T 4/00 **Overvoltage arresters using spark gaps (**H01T 2/00** takes precedence; **overvoltage protection circuits using spark gaps H02H 9/06**)**
- M H01T 4/02 . Details ~~(of spark gaps H01T 1/00)~~
- U H01T 13/00 **Sparking plugs**
- U H01T 13/02 . Details
- M H01T 13/04 . . Means providing electrical connection to sparking **plug-plugs (electric connections in general H01R)**
- U H01T 13/20 . characterised by features of the electrodes or insulation
- M H01T 13/22 . . having two or more electrodes embedded in insulation (~~for two or more sparks H01T 13/46~~ **sparking plugs having two or more spark gaps H01T 13/46**)
- M H01T 13/38 . . Selection of materials for insulation ~~(in general H01B 3/00)~~
- M H01T 23/00 **Apparatus for generating ions to be introduced into non-enclosed gases, e.g. into the atmosphere (~~discharge tubes with provision for emergence of ions from the vessel H01J 33/00; generating plasma H05H~~)**

Project: RP0300 (H02K)

- M H02K 11/00 **Structural association ~~with measuring or protective devices or of dynamo-electric machines with~~ electric components, e.g. ~~or with resistor, with switch devices for shielding, with suppressor for radio interference {monitoring or protection (heating or drying of machines in operational state, e.g. standstill heating H02K 15/125; structural association with auxiliary electric devices influencing the characteristic of, or controlling: asynchronous induction motors H02K 17/30; synchronous generators without permanent magnets H02K 19/36; dc commutator machines or universal ac/dc commutator motors H02K 23/66; ac commutator machines H02K 27/28 casings, enclosures or supports H02K 5/00)}~~**
- D H02K 11/0005 . {Electric or magnetic shielding arrangements, i.e. for shielding the electrical machine, the machine components or external devices against electric or magnetic fields generated inside or outside the machine (H02K 11/02 takes precedence)}

- D H02K 11/001 • {~~Structural association with devices for measuring, monitoring, protecting, switching~~}
 - D H02K 11/0015 • • {~~actuated by or sensing speed or position (specially adapted for machines having non-mechanical commutating devices H02K 29/06, H02K 29/14)~~}
 - D H02K 11/0021 • • • {~~using magnetic effect devices, e.g. Hall, magneto-resistive elements~~}
 - D H02K 11/0026 • • • {~~using optical devices~~}
 - D H02K 11/0031 • • • {~~using detecting coils; using the machine windings as detecting coil~~}
 - D H02K 11/0036 • • • {~~using mechanically actuated centrifugal switches~~}
 - D H02K 11/0042 • • {~~actuated by or sensing torque~~}
 - D H02K 11/0047 • • {~~actuated by or sensing temperature (overcurrent protection sensitive to other parameters than temperature H02K 11/0057)~~}
 - D H02K 11/0052 • • {~~actuated by or sensing over-voltage, e.g. over-voltage protection~~}
 - D H02K 11/0057 • • {~~actuated by or sensing overcurrent~~}
 - D H02K 11/0063 • • {~~Manual switches~~}
 - D H02K 11/0068 • {~~Structural association with control circuits, drive circuits~~}
 - D H02K 11/0073 • • {~~Drive circuits, e.g. power electronics (H02K 11/0084 and H02K 11/048 take precedence)~~}
 - D H02K 11/0078 • • {~~with devices for recording or transmitting machine parameters, e.g. memory chips for diagnostic; radio-transmitters~~}
 - D H02K 11/0084 • • {~~associated with gear motors of the worm-and-wheel type~~}
 - D H02K 11/0089 • {~~Structural association with grounding devices~~}
 - U H02K 11/0094 • {~~Structural association with other electrical or electronic devices~~}
 - N H02K 11/01 • • {~~for shielding from electromagnetic fields (means for preventing or reducing eddy-current losses in the winding heads by shielding [H02K 3/42](#))~~}
 - M H02K 11/02 • • {~~for suppression of **radioelectromagnetic** interference~~}
 - M H02K 11/022 • • {~~**Details, e.g. shields Shields**~~}
 - F H02K 11/024 • • • {~~Suppressors~~}
- WARNING**
 Group H02K 11/024 is no longer used for the classification of documents as of January 1, 2016. The content of this group is being reclassified into groups H02K 11/026 and H02K 11/028.
 Groups H02K 11/024, H02K 11/026, and H02K 11/028 should be considered in order to perform a complete search.
- E H02K 11/026 • • → {~~Suppressors associated with brushes, brush holders or their supports~~}
- WARNING**
 Group H02K 11/026 is incomplete pending reclassification of documents from group H02K 11/024.
 Groups H02K 11/026 and H02K 11/024 should be considered in order to perform a complete search.
- E H02K 11/028 • • → {~~Suppressors associated with the rotor (H02K 13/105 takes precedence)~~}
- WARNING**
 Group H02K 11/028 is incomplete pending reclassification of documents from group H02K 11/024.
 Groups H02K 11/028 and H02K 11/024 should be considered in order to perform a complete search.

- C H02K 11/04
- for rectification
- WARNING**
 Group [H02K 11/04](#) is impacted by reclassification into groups [H02K 11/049](#) and [H02K 11/05](#).
 Groups [H02K 11/04](#), [H02K 11/049](#), and [H02K 11/05](#) should be considered in order to perform a complete search.
- M H02K 11/042
- • {[Rectifiers associated with rotating rectifiers](#)}parts, e.g. rotor cores or rotary shafts
- U H02K 11/046
- • {in generators ([H02K 11/042](#) takes precedence)}
- U H02K 11/048
- • • {Rectifiers combined with drive circuits in starter-generators}
- N H02K 11/049
- • Rectifiers associated with stationary parts, e.g. stator cores
- WARNING**
 Group [H02K 11/049](#) is incomplete pending reclassification of documents from group [H02K 11/04](#).
 Groups [H02K 11/049](#) and [H02K 11/04](#) should be considered in order to perform a complete search.
- N H02K 11/05
- • • Rectifiers associated with casings, enclosures or brackets
- WARNING**
 Group [H02K 11/05](#) is incomplete pending reclassification of documents from group [H02K 11/04](#).
 Groups [H02K 11/05](#) and [H02K 11/04](#) should be considered in order to perform a complete search.
- N H02K 11/20
- for measuring, monitoring, testing, protecting or switching (rectifiers [H02K 11/04](#); power electronics [H02K 11/33](#))
- N H02K 11/21
- • Devices for sensing speed or position, or actuated thereby (specially adapted for machines having non-mechanical commutating devices [H02K 29/06](#), [H02K 29/14](#))
- N H02K 11/215
- • • Magnetic effect devices, e.g. Hall-effect or magneto-resistive elements
- N H02K 11/22
- • • Optical devices
- N H02K 11/225
- • • Detecting coils
- N H02K 11/23
- • • Mechanically-actuated centrifugal switches
- N H02K 11/24
- • Devices for sensing torque, or actuated thereby ([H02K 11/27](#) takes precedence)
- N H02K 11/25
- • Devices for sensing temperature, or actuated thereby
- N H02K 11/26
- • Devices for sensing voltage, or actuated thereby, e.g. overvoltage protection devices
- N H02K 11/27
- • Devices for sensing current, or actuated thereby (overcurrent protection responsive to temperature of the machines or parts thereof, e.g. windings, [H02K 11/25](#))
- N H02K 11/28
- • Manual switches
- N H02K 11/30
- Structural association with control circuits or drive circuits
- N H02K 11/33
- • Drive circuits, e.g. power electronics ([H02K 11/38](#) takes precedence)
- N H02K 11/35
- • Devices for recording or transmitting machine parameters, e.g. memory chips or radio transmitters for diagnosis
- N H02K 11/38
- • Control circuits or drive circuits associated with geared commutator motors of the worm-and-wheel type
- N H02K 11/40
- Structural association with grounding devices