

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

NOTES

1. The following notes are meant to assist in the use of {classes [B01](#) - [B09](#)}; they must not be read as modifying in any way the elaborations.
 1. In this sub-section, the separation of different materials, e.g. of different matter, size, or state, is predominantly found in the following subclasses:
 - [B01D](#)
 - [B03B](#), [B03C](#), [B03D](#)
 - [B04B](#), [B04C](#)
 - [B07B](#), [B07C](#)
 2. The classifying characteristics of these subclasses are:
 - the physical state of the matter to be separated
 - the principle of the process used
 - particular kinds of apparatus
 The first of these characteristics involves six different aspects, assembled in three groups.
 - a. liquid/liquid or liquid/gas and gas/gas
 - b. solid/liquid or solid/gas
 - c. solid/solid
 3. These subclasses are to be used according to the following general rules:
 - [B01D](#) is the most general class as far as separation other than solids from solids is concerned.
 - Apparatus for separating solids from solids are covered by [B03B](#) when the process concerned is regarded as the equivalent of "washing" in the sense of the mining art, even if such apparatus is a pneumatic one, especially pneumatic tables or jigs. Screens *PER SE* are not covered by this subclass but are classified in [B07B](#), even if they are being used in a wet process. All other apparatus for the separation of solids from solids according to dry methods are classified in [B07B](#).
 - If the separation takes place as a result of the detection or measurement of some feature of the material or articles to be sorted it is classified in [B07C](#).
 - It should also be noted that the separation of isotopes of the same chemical element is covered by [B01D 59/00](#), whatever process or apparatus is employed.
2. The following scheme illustrates the classification according to these rules.
 - a. LIQUID/LIQUID
LIQUID/GAS
GAS/GAS

Subclasses dealing with
Operations

	Method	Apparatus
General	B01D	B01D
by centrifugal force, using centrifuges or free-vortex apparatus	B01D	B04B , B04C
using magnetic or electrostatic effect	B03C	B03C

- b. SOLID/LIQUID
SOLID/GAS

Subclasses dealing with
Operations

	Method	Apparatus
General	B01D	B01D
by centrifugal force using centrifuges or free-vortex apparatus	B01D	B01D
using magnetic or electrostatic effect	B01D	B04B , B04C
	B03C	B03C

- c. SOLID/SOLID

B
(continued)

Dry Methods		
Subclasses dealing with Operations	Method	Apparatus
General for material in bulk	B07B	B07B
Individual sorting	B07C	B07C
Screening, sifting, pneumatic sorting	B07B	B07B
using pneumatic tables or jigs	B03B	B03B
by magnetic or electrostatic effect	B03C	B03C
by centrifugal force	B07B	B07B
using centrifuges or free-vortex apparatus	B07B	B04B , B04C
Wet Methods		
Subclasses dealing with Operations	Method	Apparatus
General	B03B	B03B
flotation, differential sedimentation	B03D	B03D
screening	B07B	B07B
Combinations = dry methods - wet methods: B03B		

SEPARATING; MIXING

B01 PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL

B01B BOILING; BOILING APPARATUS {; EVAPORATION; EVAPORATION APPARATUS}

B01D SEPARATION (separating solids from solids by wet methods [B03B](#), [B03D](#); by pneumatic jigs or tables [B03B](#); by other dry methods [B07](#); magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high-voltage electric fields [B03C](#); centrifuges, vortex apparatus [B04](#); presses per se for squeezing-out liquid from liquid-containing material [B30B 9/02](#); treatment of water [C02F](#), e.g. softening by ion-exchange [C02F 1/42](#); {arrangements of air intake cleaners in gas turbine plants [F02C 7/05](#) } ; arrangements or mounting of filters in air-conditioning, air-humidification or ventilation [F24F 13/28](#))

NOTES

- This subclass covers:
 - evaporation, distillation, crystallisation, filtration, dust precipitation, gas cleaning, absorption, adsorption;
 - similar processes which are not concerned with, or limited to, separation, except in the case of absorption or adsorption.
- In this subclass, the terms or expressions are used with the meaning indicated:
 - "filtration" and analogous terms include straining solids from fluids. Filtration is a process that normally uses a filter medium;
 - "filter medium" is a porous material or porous arrangement of material used to filter solids from fluids;
 - "filtering element" is a section of filter medium in addition to parts to which the medium is demountably or permanently fixed, including other sections of medium, end caps, peripheral frames or edge strips, but excluding housings;
 - "filter housing" is the fluid-constraining impervious vessel, whether open or closed, which contains, or is adapted to contain, one or more filtering elements or filter media;

B01D
(continued)

- "filter chamber" is the space within a housing, where filtering elements or filter media are located. Partitions may divide a single housing into a plurality of chambers;
 - "filtering apparatus" consists of filtering elements combined with housings, cleaning arrangements, motor or the like parts, which are characteristic of the particular type of apparatus. Ancillary devices such as pumps or valves are considered part of a filtering apparatus when inside the apparatus. Ancillary devices performing similar or different unit operation such as comminutors, mixers or non-filtering separators, whether or not inside the apparatus, are not considered part of a filtering apparatus. The term does not extend to apparatus, e.g. washing machines, of which the filter forms only a part.
3. For apparatus used in drying or evaporation, class [F26](#) takes precedence over this subclass.
 4. Group [B01D 59/00](#) takes precedence over the other groups of this subclass and over other subclasses in class [B01](#).
 5. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the definitions of [B01D](#).}

WARNINGS

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

B01D 15/04	covered by	B01J 39/00 - B01J 49/90
B01D 17/022	covered by	B01D 17/0202
B01D 17/025	covered by	B01D 17/0208
B01D 17/028	covered by	B01D 17/0211
B01D 17/032	covered by	B01D 17/0214
B01D 17/035	covered by	B01D 17/0205
B01D 17/038	covered by	B01D 17/0217
B01D 17/05	covered by	B01D 17/047
B01D 17/09	covered by	B01D 17/005
B01D 25/133	covered by	B01D 25/285
B01D 25/168	covered by	B01D 25/285
B01D 29/37	covered by	B01D 29/336 , B01D 29/356
B01D 35/01	covered by	B01D 36/001
B01D 61/26	covered by	A61M 1/1656
B01D 61/34	covered by	A61M 1/16
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.}

B01F MIXING, e.g. DISSOLVING, EMULSIFYING OR DISPERSING (mixing paints [B44D 3/06](#))**NOTES**

1. This subclass covers:
 - agitation or homogenisation of products formed by a combination of two or more components with the purpose of obtaining a homogeneous composition or homogeneous conditions in the mass of material;
 - stirring of a single material with the purpose of obtaining homogeneous conditions in the mass of material;
 - mixing, agitation and homogenisation of materials, irrespective of the application in which it is produced, whenever the device or the method are directed to achieve the desired effect.
2. In this subclass, the following term is used with the meaning indicated:
 - "mixing" also covers stirring of a single material.

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.}

B01J CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS OR COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS**NOTES**

1. In this subclass, the following terms or expressions are used with the meanings indicated :
 - "solid particles" includes such particles whether catalysts, reactants or inert in solid, semi-solid or pasty state;
 - "fluidised particles" means finely divided solid particles lifted and agitated by a stream of fluid;
 - "fluidised bed-technique" means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the "bed") and an upper dilute fluidised phase of "fluidised particles";
 - "processes conducted in the presence of solid particles" does not include processes wherein the only solid particles present are formed during the reaction.
2. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups

- B01J
(continued) **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:

B01J 37/025	covered by	B01J 37/02
B01J 32/00	covered by	B01J 21/00 - B01J 29/90 , B01J 33/00 - B01J 38/74
 - 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.

B01L CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE

NOTE

This subclass covers only laboratory apparatus which is either applicable solely to laboratory purposes or which, by reason of its simple construction and adaptability, is such as would not be suitable for industrial use.

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:

- B01L 3/14	covered by	B01L 3/50
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- {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.}

B02 CRUSHING, PULVERISING, OR DISINTEGRATING; PREPARATORY TREATMENT OF GRAIN FOR MILLING

B02B PREPARING GRAIN FOR MILLING; REFINING GRANULAR FRUIT TO COMMERCIAL PRODUCTS BY WORKING THE SURFACE (making dough from cereals directly [A21C](#); preservation or sterilisation of cereals [A23B](#); cleaning fruit [A23N](#); preparation of malt [C12C](#))

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.

B02C CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN ({household tools and machines for pulverising foodstuffs, e.g. coffee and spice mills [A47J 42/00](#); pharmaceutical mortars [A61J 3/02](#); mechanical processing of refuse and garbage [B03B 9/06](#); dressing mould materials by grinding [B22C 5/04](#)}; obtaining metallic powder by crushing, grinding or milling [B22F 9/04](#); {recovery of plastics by disintegrating [B29B 17/00](#); crushing raw materials in starch making [C08B 30/02](#); beaters for papermaking [D21D 1/02](#); crushing devices specially for transport in mines [E21F 13/002](#); slag crushing devices [F23J 1/00](#); fuel milling devices in combustion apparatus [F23K 1/00](#); household devices for crushing coal [F24B 15/02](#); ice disintegrating devices [F25C 5/02](#)})

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.

B03 SEPARATION OF SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS; MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS

B03B SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS

B03C **MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS** (separating isotopes [B01D 59/00](#); combinations of magnetic or electrostatic separation with separation of solids by other means [B03B](#), [B07B](#))

B03D **FLOTATION; DIFFERENTIAL SEDIMENTATION** (sedimentation in general [B01D 21/00](#); in combination with other separation of solids [B03B](#); sink-float separation [B03B 5/28](#); detergents, soaps [C11D](#))

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.

B04 **CENTRIFUGAL APPARATUS OR MACHINES FOR CARRYING-OUT PHYSICAL OR CHEMICAL PROCESSES**

B04B **CENTRIFUGES** (high-speed drum mills [B02C 19/11](#); domestic spin driers [D06F](#); analysing, measuring or monitoring physical or chemical properties of samples during centrifuging, see the relevant subclasses for these procedures, e.g. [G01N](#))

NOTE

This subclass covers machines or apparatus for separating, mixing, drying, extracting, purifying, or like treating in which centrifugal effects are generated by rotary bowls or other rotors. Where such machines or apparatus involve pumping effects, such effects must be incidental or subsidiary to the treating.

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.

B04C **APPARATUS USING FREE VORTEX FLOW, e.g. CYCLONES** ({centrifugal separation of water from steam [B01D 45/12](#);} jet mills [B02C 19/06](#); {wind sifters [B07B 7/00](#);} cyclonic type combustion apparatus [F23](#); {vortex burners for cyclone-type combustion apparatus [F23D 1/02](#); cyclonic type combustion apparatus for gas turbines [F23R 3/00](#)})

NOTE

This subclass covers apparatus for separating, mixing or like treating in which centrifugal effects are generated by free vortex flow, otherwise than by rotary bowls, rotors or curved passages.

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.

B05 **SPRAYING OR ATOMISING IN GENERAL; APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL**

NOTE

In this class, the following terms are used with the meanings indicated:

- "other fluent materials" includes semiliquids, pastes, melts, solutions, dispersions, suspensions, particulate materials, gases or vapours;
- "particulate materials" includes powders, granules, short fibres or chips;
- "coating" means the materials applied. The coating may be a liquid having become solid after drying, e.g. paint.

B05B **SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES** (spray-mixers with nozzles [B01F 25/72](#); processes for applying liquids or other fluent materials to surfaces by spraying [B05D](#))

NOTES

1. This subclass covers particularly apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. For this purpose, the materials to be projected may be suspended in a stream of gas or vapour.
2. Attention is drawn to the Note following the title of class [B05](#).
3. In this subclass, "means for controlling volume of flow" is used in the most general meaning and includes also means allowing only starting and stopping the flow
4. In this subclass, the meaning of the expression "apparatus carried on or by a person" includes all apparatus comprising at least one container for the material to be sprayed carried on or by a person during use
5. In this subclass, the word "container" is to be understood as the innermost enclosure containing the material to be sprayed

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.

B05C **APPARATUS FOR APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL** (spraying apparatus, atomising apparatus, nozzles [B05B](#); plant for applying liquids or other fluent materials to objects by electrostatic spraying [B05B 5/08](#))

NOTES

1. This subclass covers apparatus or hand tools, in general, for applying liquids or other fluent materials to a surface or a part thereof, by any mechanical or physical method, in particular apparatus for obtaining a uniform distribution of liquids or other fluent materials on a surface.
2. Attention is drawn to the Note following the title of class [B05](#).

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[B05C 5/04](#) covered by [B05C 5/001](#), [B05C 11/1042](#)
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.

B05D **PROCESSES FOR APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL** (conveying articles or workpieces through baths of liquid [B65G](#), e.g. [B65G 49/02](#))

NOTES

1. This subclass covers:
 - processes for applying liquids or other fluent materials to a surface or part of a surface, in general, by any mechanical or physical method and particularly processes producing a uniform distribution of liquids or other fluent materials on a surface;
 - pretreatment of surfaces to which liquids or other fluent materials are to be applied;
 - after-treatment of applied coatings.
2. Attention is drawn to the Note following the title of class [B05](#).

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.

B06 **GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS IN GENERAL**

B06B METHODS OR APPARATUS FOR GENERATING OR TRANSMITTING MECHANICAL VIBRATIONS OF INFRASONIC, SONIC, OR ULTRASONIC FREQUENCY, {e.g.} FOR PERFORMING MECHANICAL WORK IN GENERAL (for particular applications, [see the relevant subclasses, e.g. B07B 1/40, B23Q 17/12, B24B 31/06](#); measurement of mechanical vibrations [G01H](#); in direction finding, locating, distance or velocity measuring [G01S](#); {generating seismic energy [G01V 1/02](#)}; control of mechanical vibrations in general [G05D](#); sound-producing devices, e.g. bells, sirens, whistles [G10K](#), {e.g. methods or devices for transmitting, conducting, or directing sound in general [G10K 11/00](#)}; generation of electrical oscillations [H03B](#); electromechanical resonators in general [H03H](#); electromechanical transducers {for communication techniques, e.g. microphones, speakers} [H04R](#))

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.

B07 SEPARATING SOLIDS FROM SOLIDS; SORTING

B07B SEPARATING SOLIDS FROM SOLIDS BY SIEVING, SCREENING, SIFTING OR BY USING GAS CURRENTS; SEPARATING BY OTHER DRY METHODS APPLICABLE TO BULK MATERIAL, e.g. LOOSE ARTICLES FIT TO BE HANDLED LIKE BULK MATERIAL (wet separating processes, sorting by processes using fluent material in the same way as liquid [B03](#); combinations of dry separating apparatus with wet separating apparatus [B03B](#); using liquids [B03B](#), [B03D](#); sorting by magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields [B03C](#); centrifuges or vortex apparatus for carrying out physical processes [B04](#); hand sorting, postal sorting, sorting by switching or other devices actuated in response to detection or measurement of some feature of articles or samples of material [B07C](#))

NOTE

In this subclass any sorting or grading of bulk material or loose articles fit to be handled like bulk material results automatically from the construction of the apparatus and properties of the material, e.g. by a trap opening under an object of a certain minimum weight, by an aperture of graduated size. Sorting of articles is included in so far as the same conditions apply, e.g. sorting of timber by passing it over successively longer openings; the articles may or may not be orientated for the purpose of sorting.

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:

B07B 1/32	covered by	B07B 1/30
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- 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.

B07C POSTAL SORTING; SORTING INDIVIDUAL ARTICLES, OR BULK MATERIAL FIT TO BE SORTED PIECE-MEAL, e.g. BY PICKING (specially adapted for a specific purpose covered by another class, [see the relevant place, e.g. A43D 33/06, B23Q 7/12](#))

NOTE

This subclass [covers](#) sorting of materials or articles by hand or by devices actuated, manually or automatically, as a result of inspection or of detection or measurement of some feature of the material or articles

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.

B08 CLEANING

B08B CLEANING IN GENERAL; PREVENTION OF FOULING IN GENERAL**NOTE**

This subclass does not cover cleaning specially adapted for articles, substances, devices or surroundings provided that its cleaning aspects are fully classifiable in the relevant application place. Otherwise, classification is made in the most appropriate place in this subclass.

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.}

B09 DISPOSAL OF SOLID WASTE; RECLAMATION OF CONTAMINATED SOIL**B09B DISPOSAL OF SOLID WASTE NOT OTHERWISE PROVIDED FOR****NOTES**

1. This subclass covers only single or combined operations, e.g. multistage operations, not fully classifiable in a single other subclass.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "disposal" means the discarding, e.g. dumping, or destroying of waste or its transformation into something useful or harmless;
 - "solid waste" includes waste which, although it has liquid content, is for practical purposes handled as solid.
3. In this subclass, it is desirable to add the indexing codes of group {[B09B 2101/00](#)}.

B09C RECLAMATION OF CONTAMINATED SOIL (gatherers for removing stone or the like from the soil [A01B 43/00](#); sterilising soil by steam [A01G 11/00](#); removing undesirable matter, e.g. rubbish, from the land [E01H 15/00](#))**NOTE**

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

- "reclamation" means the partial or total elimination or the fixing of contaminants in soil.

WARNING

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

[B09C 1/04](#)

covered by

[B09C 1/02](#)

SHAPING**B21 MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL****NOTES**

1. This class covers:
 - working of metallic materials;
 - working of non-metallic materials, provided that the methods applied are similar to those used in metal-working and not provided for elsewhere.
2. This class does not cover:
 - combinations of operations covered by different subclasses of class [B21](#), which are covered by subclass [B23P](#);
 - combinations of operations covered by any particular subclass of class [B21](#) with operations covered by other classes, e.g. with operations involving removal of material, which are also covered by subclass [B23P](#), except that if the operations covered by the other classes are subsidiary to the operations properly covered by a single subclass of [B21](#) the combination is classified in that subclass.

B21B **ROLLING OF METAL** (auxiliary operations used in connection with metal-working operations covered in [B21](#), see [B21C](#); bending by rolling [B21D](#); manufacture of particular objects, e.g. screws, wheels, rings, barrels, balls, by rolling [B21H](#); pressure welding by means of a rolling mill [B23K 20/04](#))

NOTE

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

- "rolling" means rolling operations in which plastic deformations occur;
- "continuous process" means a process employing a mill train designed to have the workpiece enter one pair of rolls before leaving the preceding pair.

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.

B21C **MANUFACTURE OF METAL SHEETS, WIRE, RODS, TUBES OR PROFILES, OTHERWISE THAN BY ROLLING; AUXILIARY OPERATIONS USED IN CONNECTION WITH METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL**

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.

B21D **WORKING OR PROCESSING OF SHEET METAL OR METAL TUBES, RODS OR PROFILES WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL** (working or processing of wire [B21F](#))

NOTES

1. This subclass covers cutting or perforating of sheet metal or other stock material
2. This subclass does not cover the working of metal foils in a manner analogous to the working of paper, which is covered by classes [B26](#), [B31](#)

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.

B21F **WORKING OR PROCESSING OF METAL WIRE** ({reducing diameter by} rolling of metal [B21B](#); by drawing, auxiliary operations used in connection with metal-working without essentially removing material [B21C](#); bundling articles [B65B 13/00](#))

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.

B21G **MAKING NEEDLES, PINS OR NAILS OF METAL**

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.

B21H **MAKING PARTICULAR METAL OBJECTS BY ROLLING, e.g. SCREWS, WHEELS, RINGS, BARRELS, BALLS** (essentially from sheet metal [B21D](#))

NOTE

This subclass covers rolling operations which are specially adapted for use in the manufacture of particular objects and which are not essentially combined with any different metal-working operation unless the latter is a subsidiary operation performed in the same machine.

B21H
(continued)

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.

B21J FORGING; HAMMERING; PRESSING METAL; RIVETING; FORGE FURNACES (rolling of metal [B21B](#); making particular products by forging or pressing [B21K](#); cladding or plating [B23K](#); finishing surfaces by hammering [B23P 9/04](#); compacting surfaces by blasting with particulate material [B24C 1/10](#); general features of presses, presses for consolidating scrap [B30B](#); furnaces in general [F27](#))

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.

B21K MAKING FORGED OR PRESSED METAL PRODUCTS, e.g. HORSE-SHOES, RIVETS, BOLTS OR WHEELS (making particular articles by working sheet metal without essentially removing material [B21D](#); processing wire [B21F](#); making pins, needles or nails [B21G](#); making particular articles by rolling [B21H](#); forging machines, pressing machines, hammering machines, in general [B21J](#); making chains [B21L](#); plating [B23K](#))

NOTE

This subclass includes only forging, pressing, or hammering operations which are specially adapted for use in the manufacture of particular objects and which, so far as the invention is concerned, are not combined with any different metal-working operation unless the latter is a subsidiary operation performed in the same machine.

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.

B21L MAKING METAL CHAINS (making chains or chain links by casting [B22D 25/02](#); chains in general [F16G](#))

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.

B22 CASTING; POWDER METALLURGY

B22C FOUNDRY MOULDING (moulding refractory materials in general [B28B](#))

NOTE

This subclass covers:

- the making of moulds for casting metals or of other refractory moulds;
- selection or preparation of materials therefor;
- the necessary patterns, processes, machines, accessory devices or tools.

WARNINGS

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

B22C 3/02	covered by	B22C 3/00
B22C 5/13	covered by	B22C 5/12
B22C 7/05	covered by	B22C 7/04
B22C 9/11	covered by	B22C 9/10
B22C 9/14	covered by	B22C 9/12
B22C 9/16	covered by	B22C 9/12
B22C 15/264 - B22C 15/276	covered by	B22C 15/23
B22C 19/01	covered by	B22C 19/00

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.

B22D CASTING OF METALS; CASTING OF OTHER SUBSTANCES BY THE SAME PROCESSES OR DEVICES ([shaping of plastics or substances in a plastic state B29C](#); [metallurgical processing, selection of substances to be added to metal C21, C22](#))

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.

B22F WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER ([making alloys by powder metallurgy C22C](#)); **APPARATUS OR DEVICES SPECIALLY ADAPTED FOR METALLIC POWDER**

NOTES

1. This subclass covers the making of metallic powder only insofar as powder with specific physical characteristics is made.
2. In this subclass, the term "powder" includes somewhat larger particles which are worked, obtained or behave in a manner similar to powder, e.g. fibres.
3. In this subclass, the expression "metallic powder" covers:
 - powders consisting of metal particles;
 - powders consisting of coated metal particles;
 - powders consisting of metal-coated non-metallic particles;
 - mixtures of powders of the kinds mentioned above;
 - powders of the kinds mentioned above as the main component mixed with or containing non-metallic material, e.g. lubricating or binding agents or organic material.
4. {In this subclass, combination sets (C-Sets) are used. Detailed information about C-Sets construction and the associated syntax rules is found in the definitions for [B22F](#).}

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[B22F 3/035](#) covered by [B22F 3/03](#)
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.

B23 MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR

NOTES

1. This class covers:
 - working of metallic materials;
 - working of non-metallic materials, provided that the methods applied are similar to those used in metal-working and not provided for elsewhere;
 - features, specific to machine tools, which relate to a requirement or problem of a nature which is not peculiar to a particular kind of machine tool, e.g. feeding work, which are covered by subclass [B23Q](#), although the realisation of these features may differ according to the kind of machine tool concerned. The said subclass covers such features, in general, even if the feature or a specific function, in any particular case, is to some extent peculiar to, or is claimed only for, machine tools designed for one particular operation; only in exceptional cases are such features classified in the subclass for the machine tool concerned. Certain features of this general nature are, however, referred to subclasses relating to particular metal-working operations, especially [B23B](#), in which case the subclasses in question are not restricted, in respect of those features, to the kind of machine tool with which they are primarily concerned.
2. In this class, the following terms or expressions are used with the meanings indicated:
 - "kind of operations" and similar expressions relate to such metal-working operations as boring, drilling, milling and grinding;
 - "kind of machine" means a machine designed for a particular kind of metal-working operation (e.g. a lathe);
 - "form of machine" means a machine of a particular kind adapted or arranged for a particular way of working or for particular work, e.g. face-plate lathe, tailstock lathe, turret lathe;
 - "different machines" covers different forms of machines for performing the same type of metal-working operation, e.g. vertical and horizontal boring machines.
3. If details, components, or accessories have no essential feature specific to machine tools, the more general class, e.g. [F16](#), takes precedence.

B23B TURNING; BORING (arrangements for copying or controlling [B23Q](#))**WARNINGS**

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

B23B 3/18	covered by	B23B 3/16
B23B 3/20	covered by	B23B 3/16
B23B 3/28	covered by	B23B 3/00
B23B 5/22	covered by	B23B 31/00
B23B 5/24	covered by	B23Q 27/00 ; B23B 35/00
B23B 5/30	covered by	B23Q 35/00
B23B 5/34	covered by	B23B 31/00 ; B23B 33/00
B23B 5/42	covered by	B23Q 35/00
B23B 5/44	covered by	B23Q 27/00
B23B 7/08	covered by	B23B 7/04
B23B 7/14	covered by	B23B 7/12
B23B 7/16	covered by	B23B 7/12
B23B 9/04	covered by	B23B 9/02
B23B 9/06	covered by	B23B 9/02
B23B 9/10	covered by	B23B 9/08
B23B 9/12	covered by	B23B 9/08
B23B 15/00	covered by	B23Q 7/00
B23B 17/00	covered by	B23Q 1/01 ; B23Q 1/03 ; B23Q 1/25
B23B 19/00	covered by	B23Q 1/70
B23B 19/02	covered by	B23Q 1/70
B23B 21/00	covered by	B23Q 1/00
B23B 29/30	covered by	B23B 29/28
B23B 31/163	covered by	B23B 31/16004
B23B 31/165	covered by	B23B 31/16045
B23B 31/167	covered by	B23B 31/16045
B23B 31/169	covered by	B23B 31/16083
B23B 31/171	covered by	B23B 31/1612
B23B 31/173	covered by	B23B 31/16158
B23B 31/175	covered by	B23B 31/16195
B23B 31/177	covered by	B23B 31/16233
B23B 41/08	covered by	F16L 41/04
B23B 45/14	covered by	B25H 1/0021
B23B 45/16	covered by	B25D 16/00
B23B 47/02	covered by	B23Q 5/00
B23B 47/04	covered by	B23Q 5/00
B23B 47/06	covered by	B23Q 5/00
B23B 47/08	covered by	B23Q 5/00
B23B 47/10	covered by	B23Q 5/00
B23B 47/12	covered by	B23Q 5/00
B23B 47/14	covered by	B23Q 5/00
B23B 47/16	covered by	B23Q 5/00
B23B 47/18	covered by	B23Q 5/00
B23B 47/20	covered by	B23Q 5/00
B23B 47/22	covered by	B23Q 5/00
B23B 47/24	covered by	B23Q 16/00

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.

B23C MILLING (broaching [B23D](#); broach-milling in making gears [B23F](#); arrangement for copying or controlling [B23Q](#))**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.

B23D PLANING; SLOTTING; SHEARING; BROACHING; SAWING; FILING; SCRAPING; LIKE OPERATIONS FOR WORKING METAL BY REMOVING MATERIAL, NOT OTHERWISE PROVIDED FOR ([making toothed gears or the like B23F](#); [cutting metal by applying heat locally B23K](#); [arrangements for copying or controlling B23Q](#))

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.

B23F MAKING GEARS OR TOOTHED RACKS ([by stamping B21D](#); [by rolling B21H](#); [by forging or pressing B21K](#); [by casting B22](#); [arrangements for copying or controlling B23Q](#); [machines or devices for grinding or polishing, in general B24B](#))

NOTES

1. This subclass covers:
 - the use of methods or apparatus specially designed to produce accurately the shapes of gear teeth which are essential for proper intermeshing of toothed gearing elements to ensure the required relative motions;
 - the use of similar methods or apparatus in the production of other articles of toothed or like form, e.g. dog clutches, splined shafts, milling cutters.
2. This subclass does not cover the production of such other articles of toothed or like form using methods or apparatus other than those mentioned under Note (1) above.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "gear teeth" covers the teeth or lobes of other accurately-intermeshing members having relative movement of a similar kind, such as rotors of rotary pumps and blowers;
 - "profile" may include the outline of both faces or only one face of a tooth, or the opposing faces of adjacent teeth;
 - "straight" means that a tooth as a whole (ignoring any curvature of the tooth-face alone, e.g. crowning) is straight in the direction of its length, for example as seen in the direction of a radius of a spur wheel. It accordingly includes the teeth of helical gears and of the normal type of bevel gear;
 - "broach-milling" means milling with a rotary cutter having a number of teeth of progressively increasing depth or width.

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.

B23G THREAD CUTTING; WORKING OF SCREWS, BOLT HEADS, OR NUTS, IN CONJUNCTION THEREWITH ([making helical grooves by turning B23B 5/48](#), [by milling B23C 3/32](#), [by forging, pressing, or hammering B21K 1/56](#), [by grinding B24B 19/02](#); [arrangements for copying or controlling B23Q](#); [thread-forming by corrugating tubes B21D 15/04](#), [by rolling B21H 3/02](#))

NOTE

The term "thread cutting" is to be understood as including the use of tools similar both in form and in manner of use to thread-cutting tools, but without removing any material

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.

B23H WORKING OF METAL BY THE ACTION OF A HIGH CONCENTRATION OF ELECTRIC CURRENT ON A WORKPIECE USING AN ELECTRODE WHICH TAKES THE PLACE OF A TOOL; SUCH WORKING COMBINED WITH OTHER FORMS OF WORKING OF METAL ([processes for the electrolytic or electrophoretic production of coatings, electroforming, or apparatus therefor C25D](#); [processes for the electrolytic removal of material from objects C25E](#); [manufacturing printed circuits using precipitation techniques to apply the conductive material to form the desired conductive pattern H05K 3/18](#))

NOTE

This subclass covers the working of metal described as "electroerosion"

B23H
(continued)

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.

B23K SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, e.g. FLAME CUTTING; WORKING BY LASER BEAM (making metal-coated products by extruding metal [B21C 23/22](#); building up linings or coverings by casting [B22D 19/08](#); casting by dipping [B22D 23/04](#); manufacture of composite layers by sintering metal powder [B22F 7/00](#); arrangements on machine tools for copying or controlling [B23Q](#); covering metals or covering materials with metals, not otherwise provided for [C23C](#); burners [F23D](#))

NOTES

1. This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.
2. In this subclass, the following term is used with the meaning indicated:
 - "soldering" means uniting metals using solder and applying heat without melting either of the parts to be united

WARNINGS

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

B23K 35/04 - B23K 35/20	covered by	B23K 35/0205 - B23K 35/0294
B23K 35/363	covered by	B23K 35/3601 - B23K 35/3618
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.

B23P METAL-WORKING NOT OTHERWISE PROVIDED FOR; COMBINED OPERATIONS; UNIVERSAL MACHINE TOOLS (arrangements for copying or controlling [B23Q](#))

NOTES

1. This subclass covers:
 - combinations of work-modifying operations covered by different subclasses of classes [B21](#) - [B24](#);
 - combinations of metal-working operations with non-mechanical treatments of metal not provided for elsewhere, for example in [C21D](#), [C22C](#), [C22F](#) or [C23](#).
2. This subclass does not cover
 - non-mechanical operations on non-metallic materials unless such operations are specially mentioned in this subclass;
 - subsidiary operations performed in conjunction with main operations covered by a single subclass, e.g. assembling of parts as an essential feature of a following metal-working operation, since they are not regarded as operations per se.
3. Attention is drawn to the Notes following the title of class [B23](#).

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.

B23Q DETAILS, COMPONENTS, OR ACCESSORIES FOR MACHINE TOOLS, e.g. ARRANGEMENTS FOR COPYING OR CONTROLLING (tools of the kind used in lathes or boring machines [B23B 27/00](#)); **MACHINE TOOLS IN GENERAL CHARACTERISED BY THE CONSTRUCTION OF PARTICULAR DETAILS OR COMPONENTS; COMBINATIONS OR ASSOCIATIONS OF METAL-WORKING MACHINES, NOT DIRECTED TO A PARTICULAR RESULT**

NOTES

1. In this subclass, groups designating parts of machine tools cover machine tools characterised by constructional features of such parts.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "controlling" means influencing a variable in any way, e.g. changing its direction or its value (including changing it to or from zero), maintaining it constant, limiting its range of variation;
 - "regulation" means maintaining a variable automatically at a desired value or within a desired range of values. The desired value or range may be fixed, or manually varied, or may vary with time according to a predetermined "programme" or according to variation of another variable. Regulation is a form of control;

B23Q
(continued)

- "automatic control" is often used in the art as a synonym for regulation.
 - "Machine tool" means a mechanical working machine that removes material from a workpiece with a mechanical cutting edge to perform a shaping operation, essentially through drilling, milling, turning or cutting, e.g. sawing. The workpiece is generally made of metal, wood or plastic and is not a human body, food or clothes.
3. Attention is drawn to the Notes following the title of class [B23](#).

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.

B24 GRINDING; POLISHING

NOTE

In this class, the following term is used with the meaning indicated:

- "grinding" is used in the most general sense to mean machining and covers, in particular, "corrective" operations.

B24B MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING
(grinding of gear teeth [B23F](#), of screw-threads [B23G 1/36](#); by electro-erosion [B23H](#); abrasive or related blasting [B24C](#); tools for grinding, buffing or sharpening [B24D](#); polishing compositions [C09G 1/00](#); abrasives [C09K 3/14](#); electrolytic etching or polishing [C25F 3/00](#); grinding arrangements for use on assembled railway tracks [E01B 31/17](#)); **DRESSING OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING, POLISHING, OR LAPPING AGENTS**

NOTES

1. In this subclass, the following term is used with the meaning indicated:
"polishing" means the smoothing of a surface, i.e. a surface improvement but no improvement of the dimensional accuracy as would occur in a "grinding" operation.
2. Attention is drawn to Notes (1) and (2) following the title of subclass [B23F](#).
3. In groups [B24B 1/00](#) - [B24B 27/00](#), in connection with glass the terms "grinding" and "polishing" are treated as being equivalent.

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.

B24C ABRASIVE OR RELATED BLASTING WITH PARTICULATE MATERIAL

NOTES

1. This subclass covers:
 - the use of a blast of any particles or pellets dispersed in air, gas, or liquid for the treatment of surfaces or cutting of materials, the particles usually being of abrasive material;
 - the equivalent use of a jet of particles or pellets projected or energised by means other than a stream of air
 - {the equivalent use of material without particles or pellets for deburring, removal of extended surface areas or jet milling of local recessions, e.g. grooves}
2. In this subclass, the following terms are used with the meanings indicated:
 - "abrasive" covers any material used in the manner mentioned in Note (1) above;
 - "blast" covers any equivalent jet of material mentioned in Note (1) above

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.

B24D TOOLS FOR GRINDING, BUFFING OR SHARPENING (abrading-bodies specially designed for tumbling apparatus, e.g. abrading-balls [B24B 31/14](#); honing tools [B24B 33/08](#); lapping tools [B24B 37/11](#))

NOTES

1. This subclass covers grinding tools for working on any material
2. Tools for grinding, buffing or sharpening, specially designed for a particular purpose, which purpose is provided for in a single other place, are classified in that place, e.g. [B23F 21/02](#)

B25 HAND TOOLS; PORTABLE POWER-DRIVEN TOOLS; MANIPULATORS

NOTE

The work "portable" is to be understood as including suspension for easy manual handling, e.g. in connection with springsuspended portable apparatus for use along assembly lines

B25B TOOLS OR BENCH DEVICES NOT OTHERWISE PROVIDED FOR, FOR FASTENING, CONNECTING, DISENGAGING OR HOLDING

NOTE

This subclass is to be understood as covering those hand tools for fastening, connecting, disengaging, or holding which are not provided for in another subclass such as [B25C](#) (nailing or stapling tools) or in an application class such as [B65B](#) (packaging) or [B21F](#) (working of wire)

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:

B25B 23/143	covered by	B25B 23/1422
B25B 23/144	covered by	B25B 23/1425
B25B 23/151	covered by	B25B 23/14 , B25B 23/147
B25B 23/153	covered by	B25B 23/1415
B25B 23/155	covered by	B25B 23/141
B25B 23/157	covered by	B25B 23/14
B25B 23/159	covered by	B25B 23/14
B25B 27/067	covered by	B25B 27/06
B25B 27/073	covered by	B25B 27/062
- 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.

B25C HAND-HELD NAILING OR STAPLING TOOLS; MANUALLY OPERATED PORTABLE STAPLING TOOLS (for shoemaking [A43D](#))

NOTE

For the purposes of this subclass, the term "nail" is to be understood as including pin, bolt, and plug

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.

B25D PERCUSSIVE TOOLS {(percussive machines for forging [B21J](#); hand-held drilling machines, in general [B23B 45/00](#), for wood [B27C 3/08](#); drilling machines, used for mining or quarrying, with reciprocating tool which is turned intermittently when out of contact with the working face [E21B 1/00](#))}

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:

B25D 13/00	covered by	B25D 11/064
B25D 15/00	covered by	B25D 11/066
B25D 15/02	covered by	B25D 11/068
B25D 17/10	covered by	B25D 17/00
B25D 17/14	covered by	B23Q 11/0042
B25D 17/16	covered by	B23Q 11/0042
B25D 17/18	covered by	B23Q 11/0042
- 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.

B25F COMBINATION OR MULTI-PURPOSE TOOLS NOT OTHERWISE PROVIDED FOR; DETAILS OR COMPONENTS OF PORTABLE POWER-DRIVEN TOOLS NOT PARTICULARLY RELATED TO THE OPERATIONS PERFORMED AND NOT OTHERWISE PROVIDED FOR {(machines or arrangements of machines for performing specified combinations of different metal-working operations not covered by a single other subclass [B23P 23/00](#) and subgroups)}

NOTE

This subclass does not cover tools having a clear primary function as well as one or more secondary functions. Those tools are covered by the relevant subclass for tools having such primary function and are, thus, not classified in group [B25F 1/00](#) or [B25F 3/00](#) of this subclass.

B25G HANDLES FOR HAND IMPLEMENTS (attaching the blades or the like to handles of hand tools for soil working [A01B 1/22](#); handles of hand implements for harvesting [A01D 1/14](#); handles integral with brushware [A46B](#))

NOTES

- This subclass covers:
 - handles for hand implements, in general;
 - handles for hand implements for particular purposes, subject to Note (2) below.
- This subclass does not cover handles provided for elsewhere, e.g. it does not cover those provided for in [A45B 9/02](#), [A45C 13/22](#), [A45C 13/26](#), [A47B 95/02](#), [A47J 45/00](#), [B23D 51/01](#), [B25J 13/02](#), [B26B](#), [B60N 3/02](#), [B62B 5/06](#), [B62B 9/20](#), [B62K 21/26](#), [B62M 3/14](#), [B65D 25/28](#), [E05B](#), [G05G](#).

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.

B25H WORKSHOP EQUIPMENT, e.g. FOR MARKING-OUT WORK; STORAGE MEANS FOR WORKSHOPS (storing or packaging [B65](#))

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.

B25J MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES ({manipulators specially adapted for use in surgery [A61B 34/70](#); manipulators used in cleaning hollow articles [B08B 9/04](#) } ; manipulators associated with rolling mills [B21B 39/20](#); manipulators associated with forging machines [B21J 13/10](#); {manipulators associated with picking-up and placing mechanisms [B23P 19/007](#) } ; means for holding wheels or parts thereof [B60B 30/00](#); {vehicles with ground-engaging propulsion means, e.g. walking members [B62D 57/02](#), [B62D 57/032](#); devices for picking-up and depositing articles or materials between conveyors [B65G 47/90](#), [B65G 47/91](#); manipulators with gripping or holding means for transferring packages [B65H 67/065](#)}; cranes [B66C](#); {manipulators used in the protection or supervision of pipe-line installations [F17D 5/00](#); walking equipment adapted for nuclear steam-generators [F22B 37/006](#)}; manipulators specially adapted for, or associated with, nuclear reactors [G21C](#); {apparatus used for handling wafers during manufacture or treatment of semiconductor [H01L 21/68](#)})

NOTE

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

- "manipulator" covers handling tools, devices, or machines having a gripping or work head capable of bodily movement in space and of change of orientation, such bodily movement and change of orientation being controlled, at will, by means remote from the head.

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:

B25J
(continued)

[B25J 9/18](#)
[B25J 9/22](#)

covered by
covered by

[B25J 9/16](#)
[B25J 9/1656](#), [G05B 19/42](#)

- 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.

B26 HAND CUTTING TOOLS; CUTTING; SEVERING

B26B HAND-HELD CUTTING TOOLS NOT OTHERWISE PROVIDED FOR (for harvesting [A01D](#); for horticulture, for forestry [A01G](#); for butchering or meat treatment [A22](#); for manufacturing or repairing footwear [A43D](#); nail clippers or cutters [A45D 29/02](#); kitchen equipment [A47J](#); {vegetable slicers, julienne cutters and similar devices and holders therefor, [B26D 3/28](#)}; for surgical purposes [A61B](#); for metal [B23D](#); cutting by abrasive fluid jets [B24C 5/02](#); plier-like tools with cutting edges [B25B 7/22](#); pincers [B25C 11/02](#); handles for hand implements, in general [B25G](#); guillotine-type cutters [B26D](#); {perforating by non-mechanical means, e.g. by fluid jet, [B26F 1/26](#)}; for erasing [B43L 19/00](#); for textile materials [D06H](#))

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.

B26D CUTTING; DETAILS COMMON TO MACHINES FOR PERFORATING, PUNCHING, CUTTING-OUT, STAMPING-OUT OR SEVERING (soil-working [A01B](#); for growing crops or plants [A01D](#), [A01G](#); for fodder or straw [A01F](#); for bulk butter [A01J](#); for dough [A21C](#); slaughtering [A22B](#); for tobacco, cigars or cigarettes [A24](#); marking-out, perforating or making buttonholes [A41H 25/00](#); manufacturing footwear [A43D](#); brushmaking [A46D](#); surgery [A61B](#); disintegrating, mincing or shredding in general [B02C](#); cutting wire, making pins or nails [B21F](#), [B21G](#); of the kind used for metal [B23](#); cutting by abrasive fluid jets [B24C 5/02](#); hand-held cutting tools [B26B](#); perforating, cutting-out, stamping-out or punching, or severing by means other than cutting [B26F](#); for wood [B27](#); for stone [B28D](#); working of plastics or substances in a plastic state [B29](#); making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, [B31B](#); article or web delivery apparatus incorporating cutting or line-perforating devices [B65H 35/00](#); for leather or upholstery [B68](#); [C14B](#); for glass [C03B](#); making matches [C06F](#); for peat [C10F](#); for sugar [C13B 45/00](#); for textile materials [D06H](#); civil engineering, building, mining, see Section [E](#); for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

NOTES

- This subclass covers:
 - cutting non-metallic sheet material and metal foil in general;
 - cutting other forms of non-metallic material not otherwise provided for;
 - features specific to machines for cutting, perforating, punching, cutting-out, stamping-out and severing by means other than cutting, which relate to a requirement or problem of a nature which is not peculiar to a machine for these purposes, that is, details of or arrangements for operating or controlling such machines, although the realisation of such features may differ according to the kind of machine concerned. This subclass covers such features in general even if the feature in any particular case is to some extent peculiar to, or is claimed only for, a machine designed for perforating, punching, cutting-out, stamping-out, or for severing other than by cutting.
- If the details or arrangements have no essential features specific to cutting, perforating, punching, cutting-out, stamping-out or severing machines, the more general classes, e.g. [F16](#), take precedence.
- In this subclass, in groups [B26D 5/00](#) and [B26D 7/00](#), the following term is used with the meaning indicated:
 - "cutting" includes cutting-out, stamping-out, punching, perforating, and severing by means other than cutting.

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.

B26F PERFORATING; PUNCHING; CUTTING-OUT; STAMPING-OUT; SEVERING BY MEANS OTHER THAN CUTTING (marking-out, perforating or making buttonholes [A41H 25/00](#); shoemaking [A43D](#); surgery [A61B](#); punching metal [B21D](#); drilling metal [B23B](#); cutting of metal by applying heat locally, e.g. flame cutting, [B23K](#); cutting by abrasive fluid jets [B24C 5/02](#); details common to machines for severing [B26D](#); drilling wood [B27C](#); drilling stone [B28D](#); working of plastics or substances in a plastic state [B29](#); making boxes, cartons, envelopes or bags, of paper or similarly worked materials, e.g. metal foil, [B31B](#); of glass [C03B](#); of leather [C14B](#); of textile materials [D06H](#); for light guides [G02B 6/25](#); of tickets [G07B](#))

NOTES

1. This subclass covers:
 - perforating, punching, cutting-out, stamping-out;
 - severing, by means other than cutting, non-metallic sheet materials or metal foil in general;
 - severing, by means other than cutting, other forms of non-metallic material not otherwise provided for.
2. Attention is drawn to Notes (1) and (2) following the title of subclass [B26D](#).

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.

B27 WORKING OR PRESERVING WOOD OR SIMILAR MATERIAL; NAILING OR STAPLING MACHINES IN GENERAL

B27B SAWS FOR WOOD OR SIMILAR MATERIAL; COMPONENTS OR ACCESSORIES THEREFOR (saws specially adapted for pruning or debranching [A01G 3/08](#); sawing apparatus specially adapted for felling trees [A01G 23/091](#); features not restricted to a particular type of wood saw [B23D](#), e.g. attaching saw blades [B23D 51/00](#); machine tool frames, beds, pillars or like members, in general [B23Q 1/01](#))

WARNINGS

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

B27B 33/18	covered by	B27B 5/12
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2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

B27C PLANING, DRILLING, MILLING, TURNING OR UNIVERSAL MACHINES FOR WOOD OR SIMILAR MATERIAL (machine tools in general [B23](#); working wood using abrasive, e.g. sanding, devices [B24](#); tools for these purposes [B27G](#))

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.

B27D WORKING VENEER OR PLYWOOD (applying liquids or other fluent materials to surface in general [B05](#); grinding, sanding, or polishing of wood [B24](#); applying adhesives or glue to surfaces of wood [B27G 11/00](#); manufacture of veneer [B27L 5/00](#))

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.

B27F DOVETAILED WORK; TENONS; SLOTTING MACHINES FOR WOOD OR SIMILAR MATERIAL; NAILING OR STAPLING MACHINES (hand-held nailing or stapling tools [B25C](#); manufacture of cases, trunks or boxes from wood [B27M 3/34](#); connections for building structures in general, e.g. dowels for use in building constructions [E04B 1/38](#); jointing elements in general, e.g. dowels in general, [F16B](#) {; manufacture of long strips or planks by bonding together pieces of wood, e.g. by glueing, [B27M 3/0013](#)})

NOTE

This subclass covers also the assembling of the elements to be jointed, e.g. using adhesives, but the application of adhesives or glue to surfaces of wood to be jointed per se is dealt with in group [B27G 11/00](#){manufacture of specific semi-finished or finished articles [B27M 3/00](#)}

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.

B27G ACCESSORY MACHINES OR APPARATUS FOR WORKING WOOD OR SIMILAR MATERIALS; TOOLS FOR WORKING WOOD OR SIMILAR MATERIALS (tools for grinding [B24D](#); sawing tools [B27B 33/00](#); tools for slotting or mortising machines [B27F 5/02](#); tools for the manufacture of wood shavings, chips, powder or the like [B27L 11/00](#)); **SAFETY DEVICES FOR WOOD WORKING MACHINES OR TOOLS**

WARNINGS

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

B27G 17/08	covered by	B25D 3/00
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2. {In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme. }

B27H BENDING WOOD OR SIMILAR MATERIAL; COOPERAGE; MAKING WHEELS FROM WOOD OR SIMILAR MATERIAL

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.

B27J MECHANICAL WORKING OF CANE, CORK, OR SIMILAR MATERIALS

NOTE

In this subclass, the working of cane embraces the working of other materials, e.g. of strips of wood or plastics, in the same manner

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.

B27K PROCESSES, APPARATUS OR SELECTION OF SUBSTANCES FOR IMPREGNATING, STAINING, DYEING, BLEACHING OF WOOD OR SIMILAR MATERIALS, OR TREATING OF WOOD OR SIMILAR MATERIALS WITH PERMEANT LIQUIDS, NOT OTHERWISE PROVIDED FOR (applying liquids or other fluent materials to surfaces in general [B05](#); coating wood or similar material [B44D](#)); **CHEMICAL OR PHYSICAL TREATMENT OF CORK, CANE, REED, STRAW OR SIMILAR MATERIALS**

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.

B27L REMOVING BARK OR VESTIGES OF BRANCHES (forestry [A01G](#)); SPLITTING WOOD; MANUFACTURE OF VENEER, WOODEN STICKS, WOOD SHAVINGS, WOOD FIBRES OR WOOD POWDER

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.

B27M WORKING OF WOOD NOT PROVIDED FOR IN SUBCLASSES [B27B](#) - [B27L](#); MANUFACTURE OF SPECIFIC WOODEN ARTICLES

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.

B27N MANUFACTURE BY DRY PROCESSES OF ARTICLES, WITH OR WITHOUT ORGANIC BINDING AGENTS, MADE FROM PARTICLES OR FIBRES CONSISTING OF WOOD OR OTHER LIGNOCELLULOSIC OR LIKE ORGANIC MATERIAL (containing cementitious material [B28B](#); shaping of substances in a plastic state [B29C](#); fibreboards made from fibrous suspensions [D21J](#); drying [F26B 17/00](#))

NOTE

This subclass does not cover treatment of compositions which are in a plastic state, or worked by the same type of process or apparatus as plastics, which is covered by subclass [B29B](#) or [B29C](#).

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.

B28 WORKING CEMENT, CLAY, OR STONE

B28B SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS; SHAPING SLAG; SHAPING MIXTURES CONTAINING CEMENTITIOUS MATERIAL, e.g. PLASTER (foundry moulding [B22C](#); working stone or stone-like material [B28D](#); shaping of substances in a plastic state, in general [B29C](#); making layered products not composed wholly of these substances [B32B](#))

NOTE

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

- "the material" means:
 - a. clay or other ceramic compositions;
 - b. slag;
 - c. mixtures with water-setting properties given by clay, cementitious material, or slag.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[B28B 23/08](#) covered by [B28B 21/60](#), [B28B 23/06](#)
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.

B28C PREPARING CLAY; PRODUCING MIXTURES CONTAINING CLAY OR CEMENTITIOUS MATERIAL, e.g. PLASTER (preparing material for foundry moulds [B22C 5/00](#))

NOTE

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

- "cement" or "mixtures of cement with other substance" includes plaster;
- "clay" includes like ceramic compositions.

B28C
(continued)

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.

B28D WORKING STONE OR STONE-LIKE MATERIALS**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.

B29 WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE IN GENERAL**NOTES**

1. This class does not cover the working of plastics sheet material in a manner analogous to the working of paper, which is covered by class [B31](#).
2. In this class, the following term is used with the meaning indicated:
 - "plastics" means macromolecular compounds or compositions based on such compounds.
3. In this class, the following rules apply:
 - a. The working of plastics is, as far as possible, classified primarily according to the particular shaping technique used, e.g. in subclass [B29C](#).
 - b. Classification according to production of particular articles in subclass [B29D](#) is restricted to:
 - i. aspects which are characteristic for the production of a particular article, and not classifiable in subclass [B29B](#) or [B29C](#);
 - ii. combined operations for making the particular article which are not fully classifiable in subclass [B29C](#).
 - c. Products per se are not classified in this class. However, if a product is characterised by the way it is produced and not by its structure or composition, the production method should be classified in this class.

B29B PREPARATION OR PRETREATMENT OF THE MATERIAL TO BE SHAPED; MAKING GRANULES OR PREFORMS; RECOVERY OF PLASTICS OR OTHER CONSTITUENTS OF WASTE MATERIAL CONTAINING PLASTICS**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.

B29C SHAPING OR JOINING OF PLASTICS; SHAPING OF MATERIAL IN A PLASTIC STATE, NOT OTHERWISE PROVIDED FOR; AFTER-TREATMENT OF THE SHAPED PRODUCTS, e.g. REPAIRING (making preforms [B29B 11/00](#); making laminated products by combining previously unconnected layers which become one product whose layers will remain together [B32B 37/00](#) - [B32B 41/00](#))**NOTES**

1. This subclass covers:
 - shaping or joining of plastics;
 - shaping of material in a plastic state when a specific material is not identified;
 - shaping of material in a plastic state, not otherwise provided for.
2. This subclass does not cover:
 - working of plastics sheet material in a manner analogous to the working of paper, which is covered by class [B31](#);
 - shaping of materials provided for elsewhere, e.g. of metal, clay or foodstuffs.
3. Attention is drawn to Note (3) following the title of class [B29](#).
4. In this subclass:
 - repairing of articles made from plastics or materials in a plastic state, e.g. of articles shaped or produced by using techniques covered by this subclass or subclass [B29D](#), is classified in group [B29C 73/00](#);
 - component parts, details, accessories or auxiliary operations which are applicable to more than one moulding technique are classified in groups [B29C 31/00](#) - [B29C 37/00](#);
 - component parts, details, accessories or auxiliary operations which are only applicable or only of use for one specific shaping technique are classified only in the relevant subgroups of groups [B29C 39/00](#)-[B29C 71/00](#).
5. In this subclass, it is desirable to add the indexing codes of subclasses [B29K](#) and [B29L](#).

B29C
(continued)

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.

B29D PRODUCING PARTICULAR ARTICLES FROM PLASTICS OR FROM SUBSTANCES IN A PLASTIC STATE (making granules [B29B 9/00](#); making preforms [B29B 11/00](#))

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.

B29K INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [B29B](#), [B29C](#) OR [B29D](#), RELATING TO MOULDING MATERIALS OR TO MATERIALS FOR {[MOULDS](#), } REINFORCEMENTS, FILLERS OR PREFORMED PARTS, e.g. INSERTS

NOTES

1. This subclass constitutes an indexing scheme associated with subclasses [B29B](#), [B29C](#) or [B29D](#).
2. In this subclass, the following term is used with the meaning indicated: "rubber" covers: natural or conjugated diene rubbers; rubber in general (for a specific rubber, other than a natural rubber or a conjugated diene rubber, see the group provided for such macromolecular compounds)
3. Documents relating to compositions or properties of the materials to be shaped, said compositions having a particular influence on the shaping technique, should be classified in the shaping technique, e.g. [B29C 39/003](#), [B29C 41/003](#), [B29C 43/003](#), [B29C 45/0001](#), [B29C 48/022](#), [B29C 49/0005](#), [B29C 51/002](#), [B29C 53/005](#), [B29C 55/005](#), [B29C 61/003](#) and [B29C 63/0017](#). Copolymers are indexed with the same indexing code as the majority polymers
4. Copolymers are indexed with the same indexing code as the majority polymers
5. Compositions for moulding materials, condition, form or state of moulded material: [B29K 2001/00](#) - [B29K 2105/00](#)
6. Compositions for reinforcements: [B29K 2201/00](#) - [B29K 2313/00](#)
7. Compositions for fillers: [B29K 2401/00](#) - [B29K 2511/00](#)
8. Compositions for preformed parts: [B29K 2601/00](#) - [B29K 2713/00](#)
9. Compositions for moulds: [B29K 2801/00](#) - [B29K 2913/00](#)
10. Properties of moulding materials, reinforcements, fillers, preformed parts or moulds: [B29K 2995/00](#)

WARNING

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

B29K 105/22	covered by	B29K 2705/00
B29K 105/28	covered by	B29K 2995/0025
B29K 105/30	covered by	B29K 2995/003
B29K 105/32	covered by	B29K 2995/0026
B29K 105/34	covered by	B29K 2995/002 , B29K 2995/0007 , and B29K 2995/0015

B29L INDEXING SCHEME ASSOCIATED WITH SUBCLASS [B29C](#), RELATING TO PARTICULAR ARTICLES

NOTE

This subclass constitutes an indexing scheme for non-obligatory use only. The indexing scheme may be used to identify information which supplements subject matter already classified in subclass [B29C](#). The indexing codes of this subclass, of which only the pertinent ones should be selected, are added in conformity with paragraph 82 of the Guide so as to provide information concerning the articles produced

This subclass constitutes an indexing scheme associated with subclass [B29C](#) {and group [B29B 17/00](#). Parts of specified articles are indexed with the same index codes as the articles }

B30 PRESSES

B30B PRESSES IN GENERAL (producing ultra-high pressure or ultra-high pressure and high temperature to effect modifications of a substance, e.g. for making artificial diamonds [B01J 3/00](#))
{(compressing means for refuse receptacles [B65F 1/1405](#))}

NOTE

This subclass provides for presses in general and also for those presses, for particular purposes, which are not provided for elsewhere.

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.

B31 MAKING ARTICLES OF PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER; WORKING PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER

NOTES

1. This class covers subject matter restricted to adaptations or associations of handling sheets, webs, or blanks peculiar to paper-working, e.g. bag or box making, machinery.
2. This class does not cover:
 - making articles directly from paper pulp, which is covered by [D21J](#);
 - handling sheets, webs or blanks of wider applicability, irrespective of whether described or claimed only for paper-working machinery, which is regarded as being of a more comprehensive nature and is covered by [B65H](#).
3. Sheet materials made from plastics, laminated materials and metal foils are examples of materials that can be worked in a manner analogous to paper.

B31B MAKING CONTAINERS OF PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER (making wound articles, e.g. wound tubes, [B31C](#); combined making and filling [B65B](#))

NOTE

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

- "rigid or semi-rigid containers" includes:
 - containers not deformed by, or not taking-up the shape of, their contents;
 - containers adapted to be temporarily deformed to expel their contents;
 - pallets;
 - trays;
- "flexible containers" includes:
 - containers deformed by, or taking-up the shape of, their contents;
 - containers adapted to be permanently deformed to expel their contents.

B31C MAKING WOUND ARTICLES, e.g. WOUND TUBES, OF PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER

NOTE

The term "winding" in this subclass means forming two or more complete convolutions.

B31D MAKING ARTICLES OF PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER, 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 articles from cellulosic fibrous suspensions, e.g. wood pulp, [D21J](#))

B31F MECHANICAL WORKING OR DEFORMATION OF PAPER, CARDBOARD OR MATERIAL WORKED IN A MANNER ANALOGOUS TO PAPER (making layered products not composed wholly of paper or cardboard [B32B](#))

B32 LAYERED PRODUCTS

B32B LAYERED PRODUCTS, i.e. PRODUCTS BUILT-UP OF STRATA OF FLAT OR NON-FLAT, e.g. CELLULAR OR HONEYCOMB, FORM

NOTES

1. This subclass covers:
 - layered products comprising different kinds of material or layered products not characterised by the particular kind of material used;
 - a product similar to a layered product but comprising only material in the form of a sheet or network embedded in a mass of plastics or of physically-similar substances which mass penetrates the said sheet or network and lies on both sides of the latter (e.g. so that the sheet or network reinforces the plastics substance) PROVIDED THAT the embedded sheet or network extends coherently or connectedly over substantially the whole area of the product; thus the embedded sheet or network may be a fabric or a series of rods connected by cross wires. The manner of making such a product is, however, classified in this subclass only if it is essentially a process of building-up an assembly of layers of which at least one outer layer is preformed. If the embedded material comprises only a series of unconnected rods, the product is not classified in this subclass.
2. This subclass does not cover:
 - processes or apparatus used in, or in connection with, the production or treatment of any product, if the process or apparatus is fully classifiable in a single other class or subclass for processes or apparatus, e.g. [B05](#), [B29](#), [B44D](#), [C08J](#), [C09J](#), [C23](#);
 - compositions or preparation or treatment thereof, unless they are essentially restricted to layered products and cannot be fully classified in another class without ignoring this restriction;
 - etched metallic pattern on the surface of a printed circuit board.
3. In this subclass:
 - a film formed on a layer by spreading a substance thereon is not considered to constitute a layer itself if it serves only as an adhesive or its purpose is merely to finish a surface of a product
 - {with exclusion to [B32B 15/01](#) - [B32B 15/018](#), a coating formed directly onto a substrate layer is not considered to constitute a layer when at the moment of its contact with the substrate it does not have the form of a layer with the exception of layers that come under the meaning of Note (4).}
 - {groups designating products cover also methods or apparatus specially adapted for producing such products.}
4. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "layer" is a sheet or strip or anything else having a small thickness relatively to its other dimensions which, together with at least one other layer, exists in a product, whether it pre-existed, e.g. as a separate sheet or strip, or was formed during the production of the layered product{, e.g. formed in-situ as with casting, extrusion or moulding. It may be deformed out of the flat plane to form a three-dimensional shape}. It may or may not be homogeneous or cohesive; it may be an assembly of fibres or pieces of material. It may be discontinuous, e.g. in the form of a grating, honeycomb, or frame. It may or may not be in complete contact with the next layer, e.g. a corrugated layer against a flat layer;
 - "layered product" comprises at least two layers secured together. The term "secured" includes any method of uniting layers, e.g. needling, stitching, gluing, nailing, dovetailing or the interposition of an adhesive or adhesive impregnated support. It may also be an intermediate stage in the production of an article which is not layered in its final form, e.g. a panel with a protective layer {that} is stripped off when the panel is placed in its position of use. The layers are preformed layers or layers formed IN SITU on a preformed layer and may consist of coherent solid materials, including honeycombs and other cellular materials or of non-coherent solid materials composed of assemblies of strands, strips, fibres, tiles or the like;
 - "filamentary layer" means a layer of threads or filaments of any substance (e.g. wires) of more or less unlimited length placed in an orderly arrangement and secured together; it may be woven, knitted, braided, or netted, or formed of threads crossed or laid side by side and bonded together;
 - "fibrous layer" means a random assembly of fibres or filaments, usually of limited length, e.g. felt, fleece; the fibres {being} interengaged or connected, e.g. by adhesive.
5. If a layered product is characterised by the way it is produced and not by its structure or composition, the production method should be classified in groups [B32B 37/00](#) or [B32B 38/00](#), or in subclass [B29C](#), for example in groups [B29C 45/16](#) or [B29C 48/18](#).
6. {In this subclass,}
 - The classification of layered products is provided for in many classes, most of which are confined to a particular kind of material. However, in order that this subclass may provide a basis for making a complete search with respect to layered products, all relevant subject matter is classified in this subclass even though it may also be classified in other classes.
7. {In groups [B32B 37/00](#), [B32B 38/00](#), [B32B 41/00](#) and [B32B 39/00](#), the following expressions are used with the meaning indicated:
 - "lay-up" is considered to be the action of combining separate layers, one on top of the other, in order to form a half-product for entering the laminating process
 - "laminating" means the action of combining previously unconnected but possibly laid up layers to become one product whose layers will remain together;

B32B
(continued)

- "partial laminating" occurs when one layer does not fully cover a surface of another layer, whereby the layer with the greater surface area is laminated on only part of its surface or when two coextensive layers are bonded on only part of their facing surfaces;
 - "adhesive" means a substance applied in any state or in any manner, which has bonding properties.}
8. {In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the definitions of [B32B](#). }

WARNING

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

B32B 3/24	covered by	B32B 3/266
B32B 17/12	covered by	B32B 17/067

B33 ADDITIVE MANUFACTURING TECHNOLOGY

B33Y ADDITIVE MANUFACTURING, i.e. MANUFACTURING OF THREE-DIMENSIONAL [3-D] OBJECTS BY ADDITIVE DEPOSITION, ADDITIVE AGGLOMERATION OR ADDITIVE LAYERING, e.g. BY 3-D PRINTING, STEREOLITHOGRAPHY OR SELECTIVE LASER SINTERING

NOTES

1. This subclass covers additive manufacturing, irrespective of the process or material used.
2. This subclass is intended to enable a comprehensive search of subject matter related to additive manufacturing by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of additive manufacturing (e.g. 3D printing) that might also be entirely or partially covered elsewhere in CPC.
3. This subclass is for obligatory supplementary classification of subject matter already classified as such in other classification places, when the subject matter contains an aspect of additive manufacturing.
4. The classification symbols of this subclass are not listed first when assigned to patent documents.

PRINTING

B41 PRINTING; LINING MACHINES; TYPEWRITERS; STAMPS

B41B MACHINES OR ACCESSORIES FOR MAKING, SETTING, OR DISTRIBUTING TYPE; TYPE; PHOTOGRAPHIC OR PHOTOELECTRIC COMPOSING DEVICES
([photographic devices in general G03](#))

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.

B41C PROCESSES FOR THE MANUFACTURE OR REPRODUCTION OF PRINTING SURFACES ([photomechanical processes for producing printing surfaces G03F](#); [photoelectrical processes for producing printing surfaces G03G](#))

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.

B41D APPARATUS FOR THE MECHANICAL REPRODUCTION OF PRINTING SURFACES FOR STEREOTYPE PRINTING; SHAPING ELASTIC OR DEFORMABLE MATERIAL TO FORM PRINTING SURFACES ([{engraving by spark erosion B23H;}](#) marking or engraving metal by the action of a high concentration of electric current [B23H 9/06](#); type, machines or accessories for making, setting, or distributing type [B41B](#); processes for the manufacture or reproduction of printing surfaces [B41C](#); machines or apparatus for engraving in general, or for embossing [B44B 3/00](#), [B44B 5/00](#); chemical etching of metal [C23F 1/00](#); electrolytic etching [C25F 3/00](#); photomechanical reproduction [G03F](#))

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.

B41F PRINTING MACHINES OR PRESSES ([manifolding devices or office printing machines B41L](#))

NOTE

Attention is drawn to Notes 1 and 2 following the title of subclass [B41L](#).

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.

B41G APPARATUS FOR BRONZE PRINTING, LINE PRINTING, OR FOR BORDERING OR EDGING SHEETS OR LIKE ARTICLES; AUXILIARY FOR PERFORATING IN CONJUNCTION WITH PRINTING ([perforating in general B26D](#); [production of decorations B44C](#); [perforating in conjunction with sheet or web delivery B65H 35/00](#); [folding or unfolding thin material, e.g. sheets, webs, B65H 45/00, B65H 47/00](#))

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.

B41J TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS

NOTES

1. This subclass covers:
 - manually controlled power-operated apparatus or apparatus of this type with additional control by input of recorded information, e.g. on punched cards or tapes;
 - the "print-out" features of apparatus controlled by record carriers or electric signals in so far as these are of general interest, e.g. impression, inking, line-spacing mechanisms, printing heads.
2. This subclass does not cover:
 - electrical features of apparatus controlled by record carriers or electric signals and of interest apart from the "print-out" features of said apparatus;
 - apparatus controlled by record carriers or electric signals, as a whole.
3. In this subclass, the following term is used with the meaning indicated:
 - "paper" covers also similar flexible copy material;
 - "printing material" covers both paper and temporary record carriers from which records are transferred to a paper, but does not cover printing masters, e.g. formes.

B41K STAMPS; STAMPING OR NUMBERING APPARATUS OR DEVICES ([marking meat A22C 17/10](#); [embossing combined with printing B41F 19/00](#); [selective printing mechanisms B41J](#); [embossing decorations or marks B44B 5/00](#); [marking or coding completed packages B65B 61/26](#); [ticket printing and issuing, fare registering, nonprinting aspects of franking apparatus G07B](#))

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.

B41L APPARATUS OR DEVICES FOR MANIFOLDING, DUPLICATING OR PRINTING FOR OFFICE OR OTHER COMMERCIAL PURPOSES; ADDRESSING MACHINES OR LIKE SERIES-PRINTING MACHINES ([printing presses or machines for industrial purposes B41F](#); [stamps, stamping or numbering devices B41K](#))

NOTES

1. This subclass does not cover constituent parts common to manifolding by means of pressure-sensitive layers or intermediaries, to apparatus or machines for duplicating or printing for office or other commercial purposes, or to addressing machines or like series-printing machines, which are covered by subclass [B41F](#).
2. In this subclass, as indicated by the references, groups [B41L 15/00](#) and [B41L 17/00](#) are intended to cover letterpress and lithographic printing apparatus only in so far as it is specially adapted for office or other commercial purposes; the general constructions or features of apparatus of these types are classified in subclass [B41F](#). Constructions or features determining classification in these groups are, for example: ease of operation by clerical staff, cleanliness of operation in non-industrial environments, the use of printing surfaces constructed for the production of a limited number of copies.
3. In this subclass, the following terms are used with the meanings indicated:
 - "manifolding" means the obtaining of several copies simultaneously by means of pressure-sensitive layers when making an original;
 - "duplicating" means the obtaining of successive copies from a master, e.g. a hectographic image;
 - "stencilling" involves the use of a printing surface which is perforated to form the image, the ink flowing through the perforations on the copy material.

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.

B41M PRINTING, DUPLICATING, MARKING, OR COPYING PROCESSES; COLOUR PRINTING, ([correction of typographical errors B41J](#); [processes for applying transfer pictures or the like B44C 1/16](#); [fluid media for correction of typographical errors by coating C09D 10/00](#); [printing textiles D06P](#))

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.

B41N PRINTING PLATES OR FOILS ([photosensitive material G03](#)); **MATERIALS FOR SURFACES USED IN PRINTING MACHINES FOR PRINTING, INKING, DAMPING, OR THE LIKE; PREPARING SUCH SURFACES FOR USE AND CONSERVING THEM**

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.

B41P INDEXING SCHEME RELATING TO PRINTING, LINING MACHINES, TYPEWRITERS, AND TO STAMPS

NOTE

This subclass constitutes an internal scheme for indexing only.

B42 BOOKBINDING; ALBUMS; FILES; SPECIAL PRINTED MATTER

B42B PERMANENTLY ATTACHING TOGETHER SHEETS, QUIRES OR SIGNATURES OR PERMANENTLY ATTACHING OBJECTS THERETO ([nailing or stapling in general B25C, B27F](#); machines for both collating or gathering and permanently attaching together sheets or signatures [B42C 1/12](#); temporarily attaching sheets together [B42F](#))

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.

B42C BOOKBINDING ([cutting or perforating machines, devices or tools B26](#); [folding sheets or webs B31F](#); [ornamenting books B44](#))

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.

B42D BOOKS; BOOK COVERS; LOOSE LEAVES; PRINTED MATTER CHARACTERISED BY IDENTIFICATION OR SECURITY FEATURES; PRINTED MATTER OF SPECIAL FORMAT OR STYLE NOT OTHERWISE PROVIDED FOR; DEVICES FOR USE THEREWITH AND NOT OTHERWISE PROVIDED FOR; MOVABLE-STRIP WRITING OR READING APPARATUS

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.

B42F SHEETS TEMPORARILY ATTACHED TOGETHER; FILING APPLIANCES; FILE CARDS; INDEXING ([reading desks A47B 19/00](#); [book rests A47B 23/00](#))

NOTE

The words "filing appliance" in this subclass mean holders for collections of papers, sheets, cards, or units thereof, each paper, sheet, card, or unit being individually insertable and extractable. These words may thus include a calendar, an instruction manual, or a letter file

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.

B42P INDEXING SCHEME RELATING TO BOOKS, FILING APPLIANCES OR THE LIKE

NOTE

This subclass constitutes an internal scheme for indexing only.

B43 WRITING OR DRAWING IMPLEMENTS; BUREAU ACCESSORIES

B43K IMPLEMENTS FOR WRITING OR DRAWING ([containers, casings or accessories for cosmetic substances, e.g. shaving soap, lipstick, make-up A45D 34/00, A45D 40/00](#))

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "writing implements" covers pens, pencils, crayons, chalks or like markers for writing or drawing

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.

B43L ARTICLES FOR WRITING OR DRAWING UPON; {WRITING OR DRAWING AIDS;} ACCESSORIES FOR WRITING OR DRAWING (workshop equipment for marking-out work [B25H 7/00](#); teaching hand-writing or drawing [G09B 11/00](#))

NOTE

Devices used for both teaching and facilitating writing or drawing are classified in [G09B 11/00](#))

B43M BUREAU ACCESSORIES NOT OTHERWISE PROVIDED FOR (stapling devices [B25C 5/00](#); devices for temporarily attaching sheets together [B42F](#))

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.

B44 DECORATIVE ARTS

NOTE

Any machine, apparatus, tool or process is classified in this class insofar as it produces an effect or mark meant to be judged by the eye and insofar as such machine, apparatus, tool or process is not provided for elsewhere

B44B MACHINES, APPARATUS OR TOOLS FOR ARTISTIC WORK, e.g. FOR SCULPTURING, GUILLOCHING, CARVING, BRANDING, INLAYING (processes for producing decorative effects [B44C](#); embossing leather [C14B](#))

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.

B44C PRODUCING DECORATIVE EFFECTS (processes for applying liquids or other fluent materials to surfaces, in general [B05D](#); shaping of plastics or substances in a plastic state [B29C](#); printing processes to produce transfer pictures [B41M 3/12](#); thermographic duplication or marking methods [B41M 5/00](#)); **MOSAICS; TARSIA WORK** (imitation of mosaic or tarsia work patterns [B44F 11/04](#)); **PAPERHANGING** {(labels [G09F](#); multi-step processes for making paper labels or tags [B31D 1/02](#))}

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "decorative effects", when used in connection with the expressions "transfer picture" or "decalcomanias", covers also "information"

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.

B44D PAINTING OR ARTISTIC DRAWING, NOT OTHERWISE PROVIDED FOR; PRESERVING PAINTINGS; SURFACE TREATMENT TO OBTAIN SPECIAL ARTISTIC SURFACE EFFECTS OR FINISHES (surface treatment in general, [see the relevant places, e.g. applying liquids or other fluent materials B05](#))

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.

B44F SPECIAL DESIGNS OR PICTURES

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.

TRANSPORTING**B60 VEHICLES IN GENERAL****NOTE**

In this class, the following term is used with the meaning indicated:

- "vehicle" means all vehicles except those restricted to one of the following types of vehicles: rail vehicles, waterborne vessels, aircraft, space vehicles, hand carts, cycles, animal-drawn vehicles, and sledges, which are covered by the relevant subclasses of [B61](#) - [B64](#).

Thus, the term "vehicle" includes:

- vehicular characteristics which are common to more than one of the above listed types;
- certain characteristics restricted to automobiles, road or cross-country trailers
- The following exceptions to the above should be noted:
 - a. Subclass [B60B](#) or [B60C](#) embrace all vehicle wheels and tyres, except wheels for roller skates [A63C 17/22](#), wheels for model railway vehicles [A63H 19/22](#), and special adaptations of wheels or tyres for aircraft [B64C 25/36](#)
 - b. Subclass [B60C](#) embraces the connection of valves to inflatable elastic bodies in general, and in this respect it is not limited to vehicles
 - c. Subclass [B60L](#) embraces certain electric equipment of all electrically-propelled vehicles
 - d. Subclass [B60M](#) embraces certain power supply for, but external to, any kind of electrically-propelled vehicle
 - e. Subclass [B60R](#) embraces safety belts or body harnesses used in all types of land vehicles
 - f. Subclass [B60S](#) relates to all kinds of vehicles, except the servicing of rail locomotives [B61K 11/00](#), ground equipment for aircraft [B64F](#), or cleaning apparatus peculiar to waterborne vessels [B63B 57/00](#), [B63B 59/00](#)
 - g. Subclass [B60T](#) includes brake control systems of general applicability, and in this respect it is not limited to vehicles. It also includes rail-vehicle power-brake systems and some other features of rail-vehicle brake systems

B60B VEHICLE WHEELS (making wheels or wheel parts by rolling [B21H 1/00](#), by forging, hammering or pressing [B21K 1/28](#)); CASTORS; AXLES FOR WHEELS OR CASTORS; INCREASING WHEEL ADHESION

NOTE

Attention is drawn to the Explanatory Note following the class title ([B60](#))

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.

B60C VEHICLE TYRES; TYRE INFLATION; TYRE CHANGING; CONNECTING VALVES TO INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES

NOTES

1. In this subclass, the term "tyre" is to be understood as a separate ground-engaging, continuous element outside the periphery of the wheel rim and includes the tyre casing, cover, or jacket and any insert, e.g. inner tube. In the groups relating to repair or connection of valves, the term "tyre" is to be understood to include also inflatable elastic bodies other than tyres or inner tubes
2. Attention is drawn to the note following the title of class [B60](#).

WARNINGS

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

B60C 11/113	covered by	B60C 11/0311
B60C 11/117	covered by	B60C 11/032
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.}

B60D VEHICLE CONNECTIONS (components of brake systems [B60T 17/04](#))

NOTE

Attention is drawn to the note following the class [B60](#)

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.

B60F VEHICLES FOR USE BOTH ON RAIL AND ON ROAD; AMPHIBIOUS OR LIKE VEHICLES; CONVERTIBLE VEHICLES (air-cushion vehicles [B60V](#))

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.

B60G VEHICLE SUSPENSION ARRANGEMENTS (air-cushion vehicles [B60V](#); {cycle suspensions [B62K 25/00](#)})

NOTES

1. Attention is drawn to the Note following the title of class [B60](#).
2. {Indexing codes [B60G 2200/00](#) - [B60G 2800/00](#) are dedicated to particular aspects of suspension arrangements:
 - [B60G 2200/00](#) refers to the type of suspension arrangement;
 - [B60G 2202/00](#) refers to the suspension elements used (springs, dampers and actuators);
 - [B60G 2204/00](#) refers to mounting features of suspension elements;
 - [B60G 2206/00](#) refers to constructional and manufacturing details of suspension elements;
 - [B60G 2300/00](#) refers to the type of vehicle;
 - [B60G 2400/00](#) - [B60G 2800/00](#) refer to the electronic control of suspension arrangements, whereby:
 - [B60G 2400/00](#) refers to input parameters of the control;
 - [B60G 2401/00](#) refers to types of sensors used;
 - [B60G 2500/00](#) refers to the controlled action or device;
 - [B60G 2600/00](#) refers to particular details of the control system;
 - [B60G 2800/00](#) refers to the result to be achieved by the control action.}

WARNINGS

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

B60G 23/00	covered by	B60G 17/0165
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2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

B60H ARRANGEMENTS OF HEATING, COOLING, VENTILATING OR OTHER AIR-TREATING DEVICES SPECIALLY ADAPTED FOR PASSENGER OR GOODS SPACES OF VEHICLES

NOTE

Attention is drawn to the Note following the title of class [B60](#)

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.

B60J WINDOWS, WINDSCREENS, NON-FIXED ROOFS, DOORS, OR SIMILAR DEVICES FOR VEHICLES; REMOVABLE EXTERNAL PROTECTIVE COVERINGS SPECIALLY ADAPTED FOR VEHICLES (fastening, suspending, closing, or opening of such devices [E05](#))

NOTES

1. Windows, windcreens, non-fixed roofs, doors, or similar devices which are of general applicability, irrespective of whether described or claimed only for vehicles, are also classified in subclass [E06B](#).
2. Attention is drawn to the Note following the title of class [B60](#).

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.

B60K ARRANGEMENT OR MOUNTING OF PROPULSION UNITS OR OF TRANSMISSIONS IN VEHICLES; ARRANGEMENT OR MOUNTING OF PLURAL DIVERSE PRIME-MOVERS IN VEHICLES; AUXILIARY DRIVES FOR VEHICLES; INSTRUMENTATION OR DASHBOARDS FOR VEHICLES; ARRANGEMENTS IN CONNECTION WITH COOLING, AIR INTAKE, GAS EXHAUST OR FUEL SUPPLY OF PROPULSION UNITS IN VEHICLES

NOTES

1. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "conjoint control of drive units" includes such control for vehicles or of general applicability;
 - "auxiliary drives" means drives of auxiliary or external machines or devices from the propulsion unit, transmission, or other parts of the vehicle, and includes the control of such drives;
 - "transmission" means all propulsion parts linking propulsion units, e.g. engines, to ultimate propulsive elements, e.g. wheels;
 - "drive unit" means propulsion unit conjoint with transmission, a "drive unit" can additionally include the ultimate driven unit;
 - "sub-unit" means, e.g. propulsion unit, clutch, gearing or brake system;
 - "hybrid vehicle" means vehicles with plural diverse prime-movers for mutual or common propulsion
2. Attention is drawn to the Note following the title of class [B60](#)

B60L PROPULSION OF ELECTRICALLY-PROPELLED VEHICLES (arrangements or mounting of electrical propulsion units or of plural diverse prime-movers for mutual or common propulsion in vehicles [B60K 1/00](#), [B60K 6/20](#); arrangements or mounting of electrical gearing in vehicles [B60K 17/12](#), [B60K 17/14](#); preventing wheel slip by reducing power in rail vehicles [B61C 15/08](#); dynamo-electric machines [H02K](#); control or regulation of electric motors [H02P](#)); SUPPLYING ELECTRIC POWER FOR AUXILIARY EQUIPMENT OF ELECTRICALLY-PROPELLED VEHICLES (electric coupling devices combined with mechanical couplings of vehicles [B60D 1/64](#); electric heating for vehicles [B60H 1/00](#)); ELECTRODYNAMIC BRAKE SYSTEMS FOR VEHICLES IN GENERAL (control or regulation of electric motors [H02P](#)); MAGNETIC SUSPENSION OR LEVITATION FOR VEHICLES; MONITORING OPERATING VARIABLES OF ELECTRICALLY-PROPELLED VEHICLES; ELECTRIC SAFETY DEVICES FOR ELECTRICALLY-PROPELLED VEHICLES

NOTES

1. This subclass, subject to the above references, covers:
 - feeding of power to auxiliary circuits;
 - current collectors; arrangements thereof on rail or road vehicles or on vehicles in general
 - electrodynamic brake systems;
 - electric propulsion of vehicles; control and regulation therefor
2. In this subclass it is desirable to classify any "additional information" which is of interest for search.

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.

B60M POWER SUPPLY LINES, AND DEVICES ALONG RAILS, FOR ELECTRICALLY-PROPELLED VEHICLES (control of points and safety arrangements along railway lines [B61L](#); construction of rails and points in general [E01B](#))

NOTE

This subclass deals with:

- overhead, overground or underground power supply lines; their crossings and points, erection and supervision;
- devices along rails and rail joints, for current conduction and for insulation;
- safety devices along the route against earth currents and inductive interference with nearby communication lines

B60M
(continued)

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.

B60N SEATS SPECIALLY ADAPTED FOR VEHICLES; VEHICLE PASSENGER ACCOMMODATION NOT OTHERWISE PROVIDED FOR

NOTES

1. Attention is drawn to the Note following the class title [B60](#)
2. {In this subclass the following term is used with the meaning indicated:
 - "cushion": seating part of a seat distinguished from the back-rest}
3. {In this subclass, it is desirable to add the indexing codes [B60N 2210/00](#) - [B60N 2210/50](#), [B60N 2220/00](#) - [B60N 2220/30](#) and [B60N 2230/00](#) - [B60N 2230/30](#) with the exception of groups [B60N 2/0021](#) and [B60N 2/0035](#), where the allocation of the indexing codes is mandatory in accordance with their note}

B60P VEHICLES ADAPTED FOR LOAD TRANSPORTATION OR TO TRANSPORT, TO CARRY, OR TO COMPRISE SPECIAL LOADS OR OBJECTS (vehicles with special provisions for transporting patients or disabled persons, or their personal conveyances [A61G 3/00](#))

NOTE

Attention is drawn to the Explanatory Note following the class title ([B60](#))

WARNINGS

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

B60P 1/46	covered by	B60P 1/4421
B60P 3/022	covered by	E04G 21/14
B60P 3/325	covered by	B60P 3/32
B60P 3/33	covered by	B60P 3/34
B60P 3/335	covered by	B60P 3/32
B60P 3/345	covered by	B60P 3/34
B60P 3/35	covered by	B60P 3/34
B60P 3/355	covered by	B60P 3/34
B60P 3/363	covered by	B60P 3/36
B60P 3/367	covered by	B60P 3/36
B60P 3/37	covered by	B60P 3/343
B60P 3/373	covered by	B60P 3/32
B60P 3/377	covered by	B60P 3/34
B60P 5/00	covered by	G01G 19/08
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.

B60Q ARRANGEMENT OF SIGNALLING OR LIGHTING DEVICES, THE MOUNTING OR SUPPORTING THEREOF OR CIRCUITS THEREFOR, FOR VEHICLES IN GENERAL

NOTES

1. This subclass also covers the operation and control of lighting devices, for example:
 - arrangement or adaptation of lighting switches or signal-initiating means for vehicles;
 - control of lighting devices in relation to the vehicle as a whole, e.g. for levelling, swivelling or aiming.
2. This subclass does not cover optical, mechanical, thermal or electrical arrangement of elements within lighting devices, which are covered by groups [F21S 41/00](#) – [F21S 45/00](#).
3. Attention is drawn to the Note following the title of class [B60](#).

WARNING

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

B60Q 1/128	covered by	B60Q 1/124
B60Q 1/132	covered by	B60Q 1/124
B60Q 1/136	covered by	B60Q 1/124

B60R VEHICLES, VEHICLE FITTINGS, OR VEHICLE PARTS, NOT OTHERWISE PROVIDED FOR**NOTE**

Attention is drawn to the Note following the title of class [B60](#)

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.

B60S SERVICING, CLEANING, REPAIRING, SUPPORTING, LIFTING, OR MANOEUVRING OF VEHICLES, NOT OTHERWISE PROVIDED FOR**NOTE**

Attention is drawn to the Note following the title of class [B60](#).

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.

B60T VEHICLE BRAKE CONTROL SYSTEMS OR PARTS THEREOF; BRAKE CONTROL SYSTEMS OR PARTS THEREOF, IN GENERAL (electrodynamic brake systems for vehicle, in general [B60L](#); brakes *per se*, i.e. devices where braking effect occurs, including ultimate brake actuators, [F16D](#)); ARRANGEMENT OF BRAKING ELEMENTS ON VEHICLES IN GENERAL; PORTABLE DEVICES FOR PREVENTING UNWANTED MOVEMENT OF VEHICLES; VEHICLE MODIFICATIONS TO FACILITATE COOLING OF BRAKES**NOTE**

In this subclass, the term "brake control systems" includes brake control systems for vehicles or of general applicability

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:

B60T 8/20	covered by	B60T 8/18
B60T 8/22	covered by	B60T 8/18
B60T 8/60 - B60T 8/70	covered by	B60T 8/17
B60T 8/78 - B60T 8/84	covered by	B60T 8/17
B60T 13/122	covered by	B60T 13/147 , B60T 13/167
B60T 13/125	covered by	B60T 13/141
B60T 13/128	covered by	B60T 13/145 , B60T 13/165
B60T 13/13	covered by	B60T 13/146 , B60T 13/166
B60T 13/132	covered by	B60T 13/143 , B60T 13/162
B60T 13/135	covered by	B60T 13/144 , B60T 13/163
B60T 13/138	covered by	B60T 13/148 , B60T 13/168
B60T 13/60	covered by	B60T 13/58
B60T 15/06	covered by	B60T 15/04
B60T 15/08	covered by	B60T 15/04

- 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.

B60V AIR-CUSHION VEHICLES**NOTE**

The term "air-cushion vehicles" in this subclass includes all vehicles which are wholly or partly supported on land or water by air or other gaseous cushions

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.

B60W CONJOINT CONTROL OF VEHICLE SUB-UNITS OF DIFFERENT TYPE OR DIFFERENT FUNCTION; CONTROL SYSTEMS SPECIALLY ADAPTED FOR HYBRID VEHICLES; ROAD VEHICLE DRIVE CONTROL SYSTEMS FOR PURPOSES NOT RELATED TO THE CONTROL OF A PARTICULAR SUB-UNIT

NOTES

1. This subclass does not cover the control of a single sub-unit; such control is classified in the relevant place for the sub-unit, e.g. [F02D](#), [F16H](#). Where a single sub-unit is controlled by means of signals or commands from other sub-units, the control of this single sub-unit is classified in the relevant place for this sub-unit. For example, the control of variable-ratio gearing by means of signals from the engine or the accelerator is classified in the subclass for gearing, [F16H](#).
2. Conjoint control of driveline units, e.g. engines, and variable-ratio gearing occurring only transiently during ratio shift and being also characterised by the control of the gearing is also classified in the subclass for gearing, [F16H](#).
3. When classifying in group [B60W 10/00](#), classification must also be made in groups [B60W 20/00](#) - [B60W 60/00](#) in order to identify the purpose or use of the control.
4. In this subclass, the following terms are used with the meanings indicated:
 - "conjoint control" means that a programmed or condition-responsive {**main**} automatic controller on board the vehicle, embodying control logic for vehicle sub-units of different type or different function, sends control signals to actuators of two or more vehicle sub-units, so that the sub-units act together to solve a particular problem or in response to a particular driving condition {**in order to improve stability, comfort or safety by managing the global dynamics of the vehicle**};
 - "drive control system" means an electronic system on board a road vehicle for automatically controlling the movement {**by managing the global dynamics**} of that vehicle in order to take certain actions {**in order to improve stability, comfort or safety**};
 - "road vehicle" means a motorised vehicle for transportation on roads, e.g. an automobile, truck or bus;
 - "autonomous road vehicle" means a road vehicle capable of controlling all dynamic driving tasks without human intervention during {**a plurality of**} driving scenarios by using on-board computer hardware and software to execute decision making processes in real-time.
 - "sub-unit" means one of the following vehicle systems: {**driveline systems, e.g.**} propulsion system, clutch system, change-speed gearing system, system for distributing drive torque between front and rear axles, axle differential system, brake system, steering system, suspension system, {**and, particularly for hybrid vehicles,**} energy storage means, fuel cells, or auxiliary equipment.

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.

B60Y INDEXING SCHEME RELATING TO ASPECTS CROSS-CUTTING VEHICLE TECHNOLOGY

B61 RAILWAYS

NOTE

In this class, the following expression is used with the meaning indicated:

- "railway systems" covers:
 - a. systems in which trains or individual passenger vehicles or load carriers run on, or are guided by, ground or elevated tracks defined by rails, ropes, cables, or other guiding elements for wheels, rollers, or sliding anti-friction devices;
 - b. systems in which carriers or impellers for persons or loads are attached to, e.g. suspended from, a guided traction rope or cable which determines their path of movement;
 - c. power-and-free systems of either of the above types in which vehicles, load-carriers, or loads may be selectively coupled to, or uncoupled from, continuous traction members, e.g. cables, chains;
- "railway systems" does not cover:
 - a. conveyors with load-carriers permanently attached to a continuous traction element, e.g. chain conveyors, which are covered by group [B65G 17/00](#);
 - b. conveyors moving articles or materials over a supporting surface or underlying material, e.g. scraper conveyors, which are covered by group [B65G 19/00](#).

B61B RAILWAY SYSTEMS; EQUIPMENT THEREFOR NOT OTHERWISE PROVIDED FOR (lifts or hoists, elevators, escalators, moving walkways [B66B](#))

NOTE

In this subclass, the following terms are used with the meanings indicated:

- "rope railways" covers railways using cables or chains as traction or suspension means;
- "ropes", "cables", or "chains" are equivalent unless specifically mentioned

B61B
(continued) **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.

B61C **LOCOMOTIVES; MOTOR RAILCARS** (vehicles in general [B60](#); frames or bogies [B61F](#); special railroad equipment for locomotives [B61J](#), [B61K](#))

NOTE

This subclass covers :

- general design features or items of locomotives and motor railcars not otherwise provided for;
- non-electric features of electric locomotives

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.

B61D **BODY DETAILS OR KINDS OF RAILWAY VEHICLES** (vehicles in general [B60](#); adaptation of vehicles to special systems [B61B](#); underframes [B61F](#))

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.

B61F **RAIL VEHICLE SUSPENSIONS, e.g. UNDERFRAMES, BOGIES OR ARRANGEMENTS OF WHEEL AXLES; RAIL VEHICLES FOR USE ON TRACKS OF DIFFERENT WIDTH; PREVENTING DERAILING OF RAIL VEHICLES; WHEEL GUARDS, OBSTRUCTION REMOVERS OR THE LIKE FOR RAIL VEHICLES** (for vehicles in general [B60](#); axles or wheels [B60B](#); vehicle tyres [B60C](#))

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.

B61G **COUPLINGS; DRAUGHT AND BUFFING APPLIANCES** (vehicle connections in general [B60D](#))

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.

B61H **BRAKES OR OTHER RETARDING DEVICES SPECIALLY ADAPTED FOR RAIL VEHICLES; ARRANGEMENT OR DISPOSITION THEREOF IN RAIL VEHICLES** (electrodynamic braking of vehicles [B60L](#), in general [H02K](#); arrangements in rail vehicles for adjusting wheel-braking force to meet varying vehicular or permanent-way conditions [B60T 8/00](#); transmitting braking action from initiating means to ultimate brake actuator with power assistance or drive, brake systems incorporating such transmitting means, e.g. air-pressure brake systems, [B60T 13/00](#); construction, arrangement or operation of valves incorporated in power brake systems [B60T 15/00](#); component parts, details or accessories of brake systems [B60T 17/00](#); brakes in general [F16D](#))

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.

B61J **SHIFTING OR SHUNTING OF RAIL VEHICLES** (shifting vehicles in general [B60S](#); marshalling systems [B61B](#))

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.

B61K **AUXILIARY EQUIPMENT SPECIALLY ADAPTED FOR RAILWAYS, NOT OTHERWISE PROVIDED FOR** (energy-storing brakes [B61H](#); protection of permanent way against weather influences [E01B](#); rail cleaning, snow ploughs [E01H](#))

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.

B61L **GUIDING RAILWAY TRAFFIC; ENSURING THE SAFETY OF RAILWAY TRAFFIC** (brakes or auxiliary equipment [B61H](#), [B61K](#); point or crossing construction [E01B](#))

B62 **LAND VEHICLES FOR TRAVELLING OTHERWISE THAN ON RAILS**

B62B **HAND-PROPELLED VEHICLES, e.g. HAND CARTS OR PERAMBULATORS; SLEDGES** (characterised by animal propulsion [B62C](#); propulsion of sledges by driver or engine [B62M](#))

NOTES

1. In this subclass, the term "hand carts" also embraces hand-propelled wheeled devices in so far as the features thereof are generic to hand carts. This term also embraces pedestrian-controlled power-driven vehicles in so far as the features thereof are generic to hand carts
2. Rollers are taken as being equivalent to wheels

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[B62B 3/065](#) covered by [B62B 3/0618](#)
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.

B62C **VEHICLES DRAWN BY ANIMALS**

NOTES

1. This subclass covers only vehicles or parts thereof in so far as the relevant features are essential for animal-drawn vehicles.
2. This subclass does not cover animal-drawn vehicles which have not the features mentioned in Note (1) above. They are regarded as trailers which are covered by class [B60](#) or subclass [B62D](#), or as sledges which are covered by subclass [B62B](#).

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.

B62D MOTOR VEHICLES; TRAILERS (steering, or guiding on a desired track, of agricultural machines or implements [A01B 69/00](#); wheels, castors, axles, increasing wheel adhesion [B60B](#); vehicle tyres, tyre inflation or tyre changing [B60C](#); connections between vehicles of a train or the like [B60D](#); vehicles for use on rail and road, amphibious or convertible vehicles [B60F](#); suspension arrangements [B60G](#); heating, cooling, ventilating or other air treating devices [B60H](#); windows, windscreens, non-fixed roofs, doors or similar devices, protective coverings for vehicles not in use [B60J](#); propulsion plant arrangements, auxiliary drives, transmissions, controls, instrumentation or dashboards [B60K](#); electric equipment or propulsion of electrically-propelled vehicles [B60L](#); power supply for electrically-propelled vehicles [B60M](#); passenger accommodation not otherwise provided for [B60N](#); adaptations for load transportation or to carry special loads or objects [B60P](#); arrangement of signalling or lighting devices, the mounting or supporting thereof or circuits therefor, for vehicles in general [B60Q](#); vehicles, vehicle fittings or vehicle parts not otherwise provided for [B60R](#); servicing, cleaning, repairing, supporting, lifting, or manoeuvring, not otherwise provided for, [B60S](#); brake arrangements, brake control systems or parts thereof [B60T](#); air-cushion vehicles [B60V](#); motor-cycles, accessories therefor [B62J](#), [B62K](#); testing of vehicles [G01M](#))

NOTE

In this subclass, the following terms are used with the meanings indicated:

- "vehicles" include motor vehicles and trailers;
- "trailers" include forecars or sidecars.

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:

B62D 25/13	covered by	B60J 1/20 , B60R 13/07
B62D 25/22	covered by	B60R 3/00
B62D 65/08	covered by	B60J 10/45
B62D 101/00 - B62D 137/00	covered by	B62D 6/00 - B62D 6/008
- 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.

B62H CYCLE STANDS; SUPPORTS OR HOLDERS FOR PARKING OR STORING CYCLES; APPLIANCES PREVENTING OR INDICATING UNAUTHORIZED USE OR THEFT OF CYCLES; LOCKS INTEGRAL WITH CYCLES; DEVICES FOR LEARNING TO RIDE CYCLES

NOTES

- In this subclass, the term "cycles" also embraces scooters.
- { "Cycles" includes single or plural wheeled straddle type vehicles having a handlebar, self-balancing vehicles and kid scooters. }

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:

B62H 5/16	covered by	B62H 5/14
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- 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.

B62J CYCLE SADDLES OR SEATS; AUXILIARY DEVICES OR ACCESSORIES SPECIALLY ADAPTED TO CYCLES AND NOT OTHERWISE PROVIDED FOR, e.g. ARTICLE CARRIERS OR CYCLE PROTECTORS

NOTES

- In this subclass, the term "cycles" also embraces scooters.
- { "Cycles" includes single or plural wheeled straddle type vehicles having a handlebar, self-balancing vehicles and kid scooters. }

B62J
(continued) **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.

B62K CYCLES; CYCLE FRAMES; CYCLE STEERING DEVICES; RIDER-OPERATED TERMINAL CONTROLS SPECIALLY ADAPTED FOR CYCLES; CYCLE AXLE SUSPENSIONS; CYCLE SIDE-CARS, FORECARS, OR THE LIKE

NOTES

1. In this subclass, each of the main groups [B62K 7/00](#) - [B62K 15/00](#) takes precedence over all the preceding main groups, e.g. a child's bicycle is classified in [B62K 9/00](#) and not in [B62K 3/00](#).
2. {"Cycles" includes a single or plural wheeled straddle type vehicles having a handlebar, self-balancing vehicles and kid scooters }

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.

B62L BRAKES SPECIALLY ADAPTED FOR CYCLES {(arrangements in cycles for adjusting wheel-braking force to meet varying vehicular or ground-surface conditions [B60T 8/00](#))}

NOTES

1. This subclass covers only adaptations of brakes and their actuating mechanisms peculiar to their use on cycles.
2. This subclass does not cover brakes or actuating mechanisms of wider applicability, which are regarded as of general type, irrespective of whether described or claimed only for cycles, which are covered by subclass [B60T](#) or the relevant subclass of [F16](#).

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.

B62M RIDER PROPULSION OF WHEELED VEHICLES OR SLEDGES; POWERED PROPULSION OF SLEDGES OR {SINGLE-TRACK} CYCLES; TRANSMISSIONS SPECIALLY ADAPTED FOR SUCH VEHICLES (arrangements or mounting of transmissions in vehicles in general [B60K](#); transmission elements per se [F16](#))

NOTE

In this subclass, the term "transmission" means all parts between the prime mover or the part to which a rider immediately applies propulsive effort, e.g. pedal cranks, and a driven ground wheel.

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.

B63 SHIPS OR OTHER WATERBORNE VESSELS; RELATED EQUIPMENT

B63B SHIPS OR OTHER WATERBORNE VESSELS; EQUIPMENT FOR SHIPPING (arrangements of vessel ventilation, heating, cooling, or air-conditioning [B63J 2/00](#); floating substructures as supports of dredgers or soil-shifting machines [E02F 9/06](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

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.

B63C LAUNCHING, HAULING-OUT, OR DRY-DOCKING OF VESSELS; LIFE-SAVING IN WATER; EQUIPMENT FOR DWELLING OR WORKING UNDER WATER; MEANS FOR SALVAGING OR SEARCHING FOR UNDERWATER OBJECTS ([floating nets, floating slipways, or the like for recovering aircraft from the water B63B 35/52](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

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.

B63G OFFENSIVE OR DEFENSIVE ARRANGEMENTS ON VESSELS; MINE-LAYING; MINE-SWEEPING; SUBMARINES; AIRCRAFT CARRIERS ([means of attack or defence in general, e.g. turrets F41H](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

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.

B63H MARINE PROPULSION OR STEERING ([propulsion of air-cushion vehicles B60V 1/14; specially adapted for submarines, other than nuclear propulsion, B63G; specially adapted for torpedoes F42B 19/00](#))

NOTE

In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

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.

B63J AUXILIARIES ON VESSELS

NOTES

1. In this subclass, the following term is used with the meaning indicated:
 - "auxiliaries" means only apparatus specially arranged for rendering vessels, in general, habitable or operative, insofar as such apparatus is not specifically provided for in another subclass of class [B63](#)
2. In this subclass, the indexing codes [B63B 2201/00](#) - [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

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.

B64 AIRCRAFT; AVIATION; COSMONAUTICS

B64B LIGHTER-THAN AIR AIRCRAFT

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.

B64C AEROPLANES; HELICOPTERS**NOTE**

As far as possible, classification is made according to constructional features; classification according to particular kinds of aircraft is normally regarded as being of secondary importance, except in cases where this is considered to be the characteristic feature.

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:

B64C 35/02	covered by	B64C 35/00
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- {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.}

B64D EQUIPMENT FOR FITTING IN OR TO AIRCRAFT; FLIGHT SUITS; PARACHUTES; ARRANGEMENT OR MOUNTING OF POWER PLANTS OR PROPULSION TRANSMISSIONS IN AIRCRAFT**WARNING**

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

B64D 15/18	covered by	B64D 15/16
B64D 25/102	covered by	B64D 25/10
B64D 25/105	covered by	B64D 25/10
B64D 25/108	covered by	B64D 25/10
B64D 25/11	covered by	B64D 25/10
B64D 25/112	covered by	B64D 25/10
B64D 25/115	covered by	B64D 25/10
B64D 25/118	covered by	B64D 25/10

B64F GROUND OR AIRCRAFT-CARRIER-DECK INSTALLATIONS SPECIALLY ADAPTED FOR USE IN CONNECTION WITH AIRCRAFT; DESIGNING, MANUFACTURING, ASSEMBLING, CLEANING, MAINTAINING OR REPAIRING AIRCRAFT, NOT OTHERWISE PROVIDED FOR; HANDLING, TRANSPORTING, TESTING OR INSPECTING AIRCRAFT COMPONENTS, NOT OTHERWISE PROVIDED FOR**NOTE**

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

- "installations" embraces equipment, including mobile equipment, peculiar to use in connection with aircraft and not fitted thereto;
- "ground installations" embraces waterborne installations.

B64G COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR**NOTES**

- This subclass covers only vehicles, equipment or the like, which are specially adapted for cosmonautics.
- This subclass does not cover vehicles and equipment applicable to both cosmonautics and aeronautics, which are covered by the appropriate aeronautical subclasses of class [B64](#).
- In this subclass, the following term is used with the meaning indicated:
 - "cosmonautics" includes all transport outside the earth's atmosphere, and thus includes artificial earth satellites, and interplanetary and interstellar travel.

B64U UNMANNED AERIAL VEHICLES [UAV]; EQUIPMENT THEREFOR**NOTES**

- This subclass covers:
 - vehicles which are specially adapted for unmanned aeronautical use and the equipment therefor.
- This subclass does not cover:
 - computer control systems for the control of position, course, altitude or attitude, which are covered by group [G05D 1/00](#);
 - traffic control of UAVs, which is covered by group [G08G 5/00](#).

- B64U
(continued)
3. Aircraft or equipment applicable to both manned and unmanned use should be classified in this subclass and in the subclasses of class [B64](#) which are appropriate for the manned use.
 4. Details or features of UAVs and their equipment which are not covered by this subclass should be classified in the relevant subclasses of class [B64](#).
 5. In this subclass it is desirable to add the indexing codes of group [B64U 2101/00](#), covering particular uses or applications of the UAVs.

B65 CONVEYING; PACKING; STORING; HANDLING THIN OR FILAMENTARY MATERIAL

- B65B MACHINES, APPARATUS OR DEVICES FOR, OR METHODS OF, PACKAGING ARTICLES OR MATERIALS; UNPACKING** (bundling and pressing devices for cigars [A24C 1/44](#); devices for tensioning and securing binders adapted to be supported by the article or articles to be bound [B25B 25/00](#); applying closure members to bottles, jars or similar containers [B67B 1/00-B67B 6/00](#); concurrent cleaning, filling and closing of bottles [B67C 7/00](#); emptying bottles, jars, cans, casks, barrels or similar containers [B67C 9/00](#))

NOTE

The term "packaging" should be understood as including mainly the following operations:
 filling portable containers or receptacles with materials or small articles to form packages
 inserting articles, or groups of articles, into containers or receptacles
 closing filled containers or receptacles otherwise than by metal-, glass-, or wood-working operations
 enclosing, or partially enclosing, articles or quantities of material, in sheets, strips, blanks, webs, or tubes of thin flexible material, e.g. wrapping
 bundling articles, e.g. holding articles together in groups by applying string or wire
 attaching articles to cards, sheets, or webs

Operations of these types employed in the manufacture of articles other than packages are classified in other appropriate subclasses, e.g. making confectionery products by casting in moulds formed by wrappers [A23G](#), filling ammunition cartridges [F42B](#). Methods of packaging which are wholly characterised by the form of the package produced, or the form of the container or packaging-element utilised, are to be classified in [B65D](#) rather than in this subclass. In the following elaborations, the term "package" is used to mean the end product of a packaging operation, e.g. a filled and closed container, an article enclosed in a wrapper, a group of articles held together by string or wire, a crate of bottles. In the following elaborations, the term "materials" is to be understood as embracing matter, or masses of articles, which are to be packaged, as distinct from separate or individual articles. Machines, apparatus or methods of general application for packaging articles or materials

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
[B65B 51/09](#) covered by [B65B 51/00](#)
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.

- B65C LABELLING OR TAGGING MACHINES, APPARATUS, OR PROCESSES** (nailing or stapling in general [B25C](#), [B27F](#); applying labels for packaging purposes [B65B](#); labels, name-plates [G09F](#)){(series-printing machines [B41L](#); containers for the storage or transport of packages [B65D](#))}

NOTE

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

- "labels" covers also decalcomanias, stamps or the like

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.

B65D CONTAINERS FOR STORAGE OR TRANSPORT OF ARTICLES OR MATERIALS, e.g. BAGS, BARRELS, BOTTLES, BOXES, CANS, CARTONS, CRATES, DRUMS, JARS, TANKS, HOPPERS, FORWARDING CONTAINERS; ACCESSORIES, CLOSURES, OR FITTINGS THEREFOR; PACKAGING ELEMENTS; PACKAGES

NOTES

1. In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable
2. This subclass covers:
 - containers, packaging elements or packages with auxiliary means or provisions for displaying articles or materials;
 - methods of packaging which are wholly characterised by the form of the package produced or the form of the container or packaging element used, as distinct from the operations performed or the apparatus employed, which are covered by subclass [B65B](#)
3. This subclass, which is intended to be as comprehensive as possible, only excludes containers or packages of a nature clearly confined to a single other subclass, which are classified in that subclass
4. In this subclass, groups [B65D 5/00](#), [B65D 27/00](#), [B65D 29/00](#), [B65D 31/00](#) or [B65D 65/00](#) include constructional features of foldable or erectable container or wrapper blanks as well as the containers or wrappers formed by folding or erecting such blanks
5. Containers, packaging elements or packages classified in group [B65D 85/00](#), are also classified according to the constructional or functional features, if such features are of interest
6. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "rigid or semi-rigid containers" includes:
 - a. containers not deformed by, or not taking-up the shape of, their contents;
 - b. containers adapted to be temporarily deformed to expel their contents;
 - c. pallets;
 - d. trays;
 - "flexible containers" includes:
 - a. containers deformed by, or taking-up the shape of, their contents;
 - b. containers adapted to be permanently deformed to expel their contents;
 - "packaging elements" includes:
 - a. elements, other than containers, for covering, protecting, stiffening, or holding together articles or materials to be stored or transported;
 - b. packaging materials of special type or form not provided for in other subclasses;
 - "packages" includes:
 - a. combination of containers or packaging elements with articles or materials to be stored or transported;
 - b. articles joined together for convenience of storage or transport;
 - "paper" includes materials, e.g. cardboard, plastic sheet materials, laminated materials, or metal foils, worked in a manner analogous to paper;
 - "large containers", in groups [B65D 88/00](#) or [B65D 90/00](#), means containers having about the size of containers used in container traffic, sometimes referred to as freight, forwarding or "ISO" [International Organization for Standardization] containers, or larger containers
7. Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container of closure, e.g. [B65D 5/54](#), [B65D 17/00](#), [B65D 27/30](#), [B65D 27/30](#), [B65D 27/34](#), [B65D 33/34](#), [B65D 41/32](#), [B65D 47/36](#), [B65D 49/12](#), [B65D 51/20](#), [B65D 55/06](#)

WARNINGS

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

B65D 5/34	covered by	B65D 5/325
B65D 5/35	covered by	B65D 5/325
B65D 5/355	covered by	B65D 5/0005
B65D 5/43	covered by	B65D 5/42
B65D 5/462	covered by	B65D 5/46008 - B65D 5/46032
B65D 5/465	covered by	B65D 5/46008 - B65D 5/46032
B65D 5/468	covered by	B65D 5/4608
B65D 5/472	covered by	B65D 5/46048
B65D 5/475	covered by	B65D 5/46008
B65D 5/478	covered by	B65D 5/46056
B65D 5/4805 - B65D 5/489	covered by	B65D 5/48002
B65D 5/49 - B65D 5/499	covered by	B65D 5/48024
B65D 5/63	covered by	B65D 5/72
B65D 6/00 - B65D 6/40	covered by	B65D 7/00 , B65D 9/00 , B65D 11/00 , B65D 15/00
B65D 8/00 - B65D 8/22	covered by	B65D 7/00 , B65D 9/00 , B65D 11/00 , B65D 15/00
B65D 19/22	covered by	B65D 19/0004

B65D

(continued)

B65D 19/24	covered by	B65D 19/0004
B65D 19/26	covered by	B65D 19/0004
B65D 19/28	covered by	B65D 19/0004
B65D 19/30	covered by	B65D 19/0004
B65D 19/31	covered by	B65D 19/0004
B65D 19/32	covered by	B65D 19/0002 , B65D 19/0004
B65D 19/34	covered by	B65D 19/0004
B65D 21/024	covered by	B65D 21/0201
B65D 21/028	covered by	B65D 21/0204
B65D 21/032	covered by	B65D 21/0209
B65D 21/036	covered by	B65D 21/0217
B65D 25/26	covered by	B65D 81/02
B65D 30/00 - B65D 30/28	covered by	B65D 29/00 , B65D 31/00
B65D 33/17	covered by	B65D 33/1633
B65D 33/36	covered by	B65D 75/58
B65D 33/38	covered by	B65D 75/5861
B65D 35/48 - B65D 35/54	covered by	B65D 47/2018
B65D 39/18	covered by	B65D 39/00
B65D 41/01	covered by	B65D 41/00
B65D 43/03	covered by	B65D 43/00 + B65D 2543/00027
B65D 43/04	covered by	B65D 43/0214
B65D 43/10	covered by	B65D 43/0204
B65D 47/22	covered by	B65D 47/20
B65D 47/34	covered by	B05B 11/10
B65D 50/08	covered by	B65D 50/02
B65D 50/10	covered by	B65D 50/061
B65D 50/12	covered by	B65D 50/00
B65D 50/14	covered by	B65D 50/067
B65D 65/26 - B65D 65/32	covered by	B65D 75/58
B65D 65/34	covered by	B65D 75/66
B65D 65/36	covered by	B65D 75/58
B65D 71/52 - B65D 71/68	covered by	B65D 71/0003 - B65D 71/0077
B65D 75/60 - B65D 75/64	covered by	B65D 75/58
B65D 81/15	covered by	B65D 81/05
B65D 81/17	covered by	B65D 81/02
B65D 85/57	covered by	G11B 23/00
B65D 85/575	covered by	G11B 23/00
B65D 85/86	covered by	B65D 2585/86 , H05K 13/00
B65D 85/88	covered by	B65D 2585/88 , H01M 50/00
B65D 85/90	covered by	H01L 21/00 , H05K 13/00

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.}

B65F

GATHERING OR REMOVAL OF DOMESTIC OR LIKE REFUSE (disinfecting refuse [A61L](#); refuse disintegrators [B02C](#); sorting refuse [B03B](#); [B07B](#); handcarts for transporting refuse receptacles [B62B](#); sack holders [B65B 67/00](#); converting refuse into fertilisers [C05F](#); converting refuse into solid fuels [C10L](#); sewers, cesspools [E03F](#); arrangements in buildings for the disposal of refuse [E04F 17/10](#); refuse-consuming furnaces [F23G](#); {for surgical articles [A61B 50/36](#)})

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.

B65G TRANSPORT OR STORAGE DEVICES, e.g. CONVEYORS FOR LOADING OR TIPPING, SHOP CONVEYOR SYSTEMS OR PNEUMATIC TUBE CONVEYORS (packaging [B65B](#); handling thin or filamentary materials, e.g. paper sheets or thread, [B65H](#); cranes [B66C](#); portable mobile or lifting or hauling appliances, e.g. hoists, [B66D](#); devices for lifting or lowering goods for loading or unloading purposes, e.g. fork-lift trucks, [B66F 9/00](#); emptying bottles, jars, casks, barrels or similar containers, not otherwise provided for, [B67C 9/00](#); delivering or transferring liquids [B67D](#); filling or discharging vessels for liquefied, solidified or compressed gases [F17C](#); pipe-line systems for fluids [F17D](#))

NOTE

This subclass does not cover road or railway vehicles, waterborne vessels or aircraft per se, or their adaptation for transport purposes. This subject matter is covered by classes [B60](#) - [B64](#), for example in the following places:

- vehicles adapted for load transportation [B60P](#);
- railway wagons adapted for load transportation [B61D](#);
- hand carts [B62B](#);
- superstructures for load-carrying vehicles [B62D 33/00](#);
- loading or load-accommodating arrangements on ships or vessels [B63B 25/00](#), [B63B 27/00](#);
- equipment for handling freight in aircraft [B64D 9/00](#)

WARNINGS

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

B65G 47/10	covered by	B65G 1/1373
B65G 47/86	covered by	B65G 47/842 , B65G 47/847
B65G 69/32	covered by	B65G 69/28
B65G 69/34	covered by	B65G 69/28
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.

B65H HANDLING THIN OR FILAMENTARY MATERIAL, e.g. SHEETS, WEBS, CABLES

NOTES

1. This subclass does not cover methods or devices intimately associated with other operations on thin or filamentary material, e.g. sheets, webs, cables or means for performing such operations, which are classified in the relevant subclasses for these operations, e.g.:

B07C	Postal sorting, similar sorting of documents, e.g. cheques
B08B 1/20	Cleaning of moving articles, e.g. of moving webs or of objects on a conveyor
B21B 41/00	Metal rolling involving guiding, conveying or accumulating easily-flexible work, e.g. wire, sheet metal bands, in loops or curves
B21C 47/00	, Winding-up, coiling, winding-off or temporarily
B21C 49/00	accumulating metal wire, metal band or other flexible metal material, characterised by features relevant to metal processing only, other than by rolling
B21D 43/00	Feeding, positioning or storing devices, combined with, or arranged in, or specially adapted for use in connection with, apparatus for working or processing sheet metal without essentially removing material
B23K 9/12	Means for automatic feeding of electrodes for spot or seam welding or cutting
B29C 31/00	Handling for shaping or joining of plastics, for shaping of substances in a plastic state in general or for after-treatment of shaped products, e.g. feeding the material to be shaped
B41B 15/32	, Film-handling mechanisms in photographic
B41B 21/32	composing machines
B41F 13/02	Conveying or guiding webs through rotary printing presses or machines
B41J 11/00	to Handling of copy- or impression-transfer material
B41J 17/00	in typewriters or selective printing mechanisms
B41K 3/44	Means for handling copy matter in stamping or numbering apparatus or devices
B41L	Handling sheets or webs in apparatus or devices for manifolding, duplicating or printing for office or other commercial purposes, or on addressing machines or like series-printing machines
B42B	Handling relating to permanently attaching together sheets, quires, or signatures
B42C	Handling sheets in book-binding
B65B	Handling of sheets or webs in apparatus for, or methods of, packaging articles, not of interest apart from their application in packaging machines
B65C	Handling of labels in labelling or tagging apparatus
C14B 1/62	Winding or stacking hides or leather in machines or devices for manufacturing leather
D01- D07	Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables

B65H (continued)	D21F 2/00 F26B 13/00 G03B G06K 13/00 G06M 7/00 G11B 15/00 G11B 19/00 G11B 23/00 G11B 25/00 H01F 41/06 H01G 13/02 H04N 1/00	<p>Transferring webs from wet ends to press sections in paper-making</p> <p>Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus</p> <p>Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them</p> <p>Conveying record carriers from one station to another</p> <p>Counting of flat articles, e.g. sheets, carried by a conveyor to Information storage based on relative movement</p> <p>, between record carrier and transducer,</p> <p>, involving handling record carriers for recording or reproducing</p> <p>Manufacturing coils for magnets, inductances, transformers, by winding</p> <p>Machines for winding capacitors</p> <p>Sheet handling not of interest apart from its use in systems for transmission or reproduction of pictures or patterns not varying in time, e.g. facsimile transmission</p>
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2. In this subclass:
 - the groups relating to thin material, as defined under (i) of Note (3) below, are primarily intended to cover the handling of articles made of paper or cardboard, but also include the handling of articles made of other materials which have similar characteristics or present similar handling problems, e.g. articles made of sheet-plastics or leather;
 - the groups relating to filamentary material (groups [B65H 49/00](#) onwards,) as defined in Note (3) below, cover only methods or devices of general application or interest.
3. In this subclass, the following terms or expressions are used with the meanings indicated:
 - "handling" includes feeding, folding (other than in the manufacture of products), guiding, orientating, storing, unwinding, and winding;
 - "thin material" includes:
 - i. sheets, signatures, envelopes, blanks, and thin and thin piles thereof (hereinafter referred to as "articles"), and
 - ii. webs, tapes, and films, e.g. of paper, fabric, metal foil, or plastics;
 - "filamentary material" includes thread, wires, ropes, cables, and hoses;
 - "package" means a mass of filamentary material, formed by coiling, depositing, or winding, with or without a supporting core or former or an enclosing container or receptacle.
 - {"yarn" also covers similar filamentary materials. }

WARNINGS

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

B65H 19/16	covered by	B65H 19/1889
B65H 35/07	covered by	B65H 35/0006
B65H 77/00	covered by	B65H 23/00 , B65H 59/00
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.

B66 HOISTING; LIFTING; HAULING

B66B ELEVATORS; ESCALATORS OR MOVING WALKWAYS ([{apparatus for raising or lowering persons on theatrical stages or the like A63J 5/12}](#) ; funicular railbound systems with rigid ground-supported tracks and cable traction, e.g. cliff railways, [B61B 9/00](#); arrangements of ammunition handlers in vessels [B63G 3/00](#); hoists, lifts, or conveyors for loading or unloading in general [B65G](#); braking or detent devices controlling normal movements of winding drums or barrels [B66D](#); ship-lifting devices [E02C](#); garages for many vehicles with mechanical means for lifting vehicles [E04H 6/12](#); hoists for feeding ammunition or projectiles to launching apparatus or to loading mechanisms [F41A 9/00](#))

NOTE

- In this subclass, the following term is used with the meaning indicated:
- "elevator" covers the term "lift", and the two terms are interchangeable

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.

B66C CRANES; LOAD-ENGAGING ELEMENTS OR DEVICES FOR CRANES, CAPSTANS, WINCHES, OR TACKLES ({specially adapted for lifting invalids [A61G 7/10](#);} rope, cable, or chain winding mechanisms, braking or detent devices therefor [B66D](#); specially adapted for nuclear reactors [G21](#))

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:

B66C 23/61	covered by	B66C 23/60
B66C 23/683	covered by	B66C 23/68
B66C 23/687	covered by	B66C 23/701
B66C 23/69	covered by	B66C 23/701
B66C 23/693	covered by	B66C 23/705
B66C 23/697	covered by	B66C 23/707
- 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.

B66D CAPSTANS; WINCHES; TACKLES, e.g. PULLEY BLOCKS; HOISTS (winding or unwinding ropes or cables for feeding or storage purposes [B65H](#); rope or cable winding or unwinding mechanisms for lifts [B66B](#))

NOTE

This subclass **covers**:

- rope, cable or chain winding or unwinding mechanisms for moving all loads except lift cages, e.g. winches for dredges;
- braking or detent devices characterised by their application for retarding or preventing rotary movement of a winding drum or barrel

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:

B66D 1/395	covered by	B66D 1/36 , B66D 1/50
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- 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.

B66F HOISTING, LIFTING, HAULING OR PUSHING, NOT OTHERWISE PROVIDED FOR, e.g. DEVICES WHICH APPLY A LIFTING OR PUSHING FORCE DIRECTLY TO THE SURFACE OF A LOAD ({invalid lifting devices [A61G 7/10](#); } mounting artificial islands on piles or like supports [E02B 17/00](#); scaffolding combined with lifting devices [E04G 1/22](#); lifting devices for sliding forms [E04G 11/24](#); lifting of buildings [E04G 23/06](#); shores or struts [E04G 25/00](#); lifts or other hoisting devices on ladders [E06C 7/12](#); props for mining [E21D 15/00](#))

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:

B66F 19/02	covered by	B66F 19/00
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- 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.

B67 OPENING, CLOSING {OR CLEANING} BOTTLES, JARS OR SIMILAR CONTAINERS; LIQUID HANDLING

B67B APPLYING CLOSURE MEMBERS TO BOTTLES JARS, OR SIMILAR CONTAINERS; OPENING CLOSED CONTAINERS (opening or closing devices attached to, or incorporated in, containers or container closures [B65D](#))

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:

B67B 7/46	covered by	B67B 7/30 - B67B 7/385
B67B 7/48 - B67B 7/52	covered by	B67B 7/24 , B67B 7/26 , B67B 7/28

B67B
(continued)

[B67B 7/54-B67B 7/90](#)

covered by

[B67B 7/30-B67B 7/385](#)

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.

B67C CLEANING, FILLING WITH LIQUIDS OR SEMILIQUIDS, OR EMPTYING, OF BOTTLES, JARS, CANS, CASKS, BARRELS, OR SIMILAR CONTAINERS, NOT OTHERWISE PROVIDED FOR; FUNNELS

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.

B67D DISPENSING, DELIVERING OR TRANSFERRING LIQUIDS, NOT OTHERWISE PROVIDED FOR (cleaning pipes or tubes or systems of pipes or tubes [B08B 9/02](#); emptying or filling of bottles, jars, cans, casks, barrels, or similar containers, not otherwise provided for [B67C](#); water supply [E03](#); pipe systems [F17D](#); domestic hot-water supply systems [F24D](#); measuring volume, volume flow, mass flow or liquid level, metering by volume [G01F](#); coin-freed or like apparatus [G07F](#))

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.

B68 SADDLERY; UPHOLSTERY

B68B HARNESS; DEVICES USED IN CONNECTION THEREWITH; WHIPS OR THE LIKE

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.

B68C SADDLES; STIRRUPS

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.

B68F MAKING ARTICLES FROM LEATHER, CANVAS, OR THE LIKE

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.

B68G METHODS, EQUIPMENT, OR MACHINES FOR USE IN UPHOLSTERING; UPHOLSTERY NOT OTHERWISE PROVIDED FOR

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.

MICROSTRUCTURAL TECHNOLOGY; NANOTECHNOLOGY

B81 MICROSTRUCTURAL TECHNOLOGY

NOTES

1. This class covers microstructural devices or systems, including at least one essential element or formation characterised by its very small size typically within the range of 10^{-4} to 10^{-7} meters, i.e. its significant features cannot, in at least one dimension, be completely discerned without the use of an optical microscope.
2. In this class, the following expressions are used with the meaning indicated:
 - "microstructural devices" covers:
 - i. micromechanical devices comprising movable, flexible or deformable elements; and

B81
(continued)

- ii. three-dimensional structures without movable, flexible or deformable elements, comprising microformations designed to accomplish an essential structural function for interacting with their environment, as opposed to purely electronic or chemical functions, regardless of whether the structures are combined with microelectronic devices or formed from specific materials;
- "microstructural systems" covers:
 - i. systems of cooperating microstructural devices; and
 - ii. microelectro-mechanical or microopto-mechanical systems, which combine on a common substrate the specific features of microstructural devices and electrical or optical components, e.g. for controlling, analysing or signalling the functioning of microstructural devices.

B81B MICROSTRUCTURAL DEVICES OR SYSTEMS, e.g. MICROMECHANICAL DEVICES (piezoelectric, electrostrictive or magnetostrictive elements per se [H10N 30/00](#))

NOTES

1. This subclass does not cover:
 - purely electrical or electronic devices per se which are covered by section [H](#), e.g. subclass [H01L](#) or class [H10](#);
 - purely optical devices per se which are covered by subclasses [G02B](#) or [G02F](#);
 - essentially two-dimensional structures, e.g. layered products which are covered by subclass [B32B](#);
 - chemical or biological structures per se which are covered by section [C](#);
 - structures in atomic scale produced by manipulation of single atoms or molecules, which are covered by group [B82B 1/00](#).
2. Devices or systems classified in this subclass are also classified in appropriate subclasses providing for their structural or functional features, if such features are of interest.
3. Attention is drawn to the following places:

A61K 9/50	Microcapsules for medicinal preparations
B25J 7/00	Micromanipulators
G02B 21/32	Micromanipulators combined with microscopes
G11B 5/127	Magnetic heads
H01P 3/08	Waveguide microstrips.
4. In this subclass, local "residual" subgroups, e.g. [B81B 7/0077](#), are used with the following purpose:
When classifying a document which does not fit in any of a set of subgroups with the same dot-level, the document should be classified in the residual group, if present, and not in the group at the hierarchical level one dot above.
In the example, the document shall be classified in [B81B 7/0077](#) and not in [B81B 7/0032](#) as [B81B 7/0077](#) is "residual" to [B81B 7/0035-B81B 7/0074](#)

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.

B81C PROCESSES OR APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OR TREATMENT OF MICROSTRUCTURAL DEVICES OR SYSTEMS (making microcapsules or microballoons [B01J 13/02](#); processes or apparatus peculiar to the manufacture or treatment of piezoelectric, electrostrictive or magnetostrictive element per se [H10N 30/01](#))

NOTES

1. This subclass does not cover:
 - processes or apparatus for the manufacture or treatment of purely electrical or electronic devices, which are covered by section [H](#), e.g. group [H01L 21/00](#);
 - processes or apparatus involving the manipulation of single atoms or molecules, which are covered by group [B82B 3/00](#).
2. In this subclass, local "residual" subgroups, e.g. [B81C 1/00126](#), are used with the following purpose.
When classifying a document which does not fit in any of a set of subgroups with the same dot-level, the document should be classified in the residual group, if present, and not in the group at the hierarchical level one dot above.
In the example, the document shall be classified in [B81C 1/00126](#) and not in [B81C 1/00023](#) as [B81C 1/00126](#) is "residual" to [B81C 1/00031-B81C 1/00119](#)

B82 NANOTECHNOLOGY

NOTE

In this class, the following terms are used with the meaning indicated:

- "nanosize" or "nanoscale" relate to a controlled geometrical size below 100 nanometres (nm) in one or more dimensions;
- "nanostructure" means an entity having at least one nanosized functional component that makes physical, chemical or biological properties or effects available, which are uniquely attributable to the nanoscale.

B82B NANOSTRUCTURES FORMED BY MANIPULATION OF INDIVIDUAL ATOMS, MOLECULES, OR LIMITED COLLECTIONS OF ATOMS OR MOLECULES AS DISCRETE UNITS; MANUFACTURE OR TREATMENT THEREOF

NOTES

1. This subclass does not cover chemical or biological nanostructures per se, provided for elsewhere, e.g. in classes [C08](#) or [C12](#).
2. Attention is drawn to the Note following the title of class [B82](#), which defines the meaning of the terms "nanosize", "nanoscale" and "nanostructure" in this subclass.
3. Subject matter classified in this subclass is further classified in subclass [B82Y](#), in order to enable a comprehensive search of nanostructure technology using classification symbols of [B82Y](#) in combination with classification symbols of [B82B](#).
4. Nanostructures having specialised features or functions are further classified in appropriate places in other subclasses that provide for those features or functions, e.g. in [G01Q](#), [G02F 1/017](#), [H10D 30/43](#).

B82Y SPECIFIC USES OR APPLICATIONS OF NANOSTRUCTURES; MEASUREMENT OR ANALYSIS OF NANOSTRUCTURES; MANUFACTURE OR TREATMENT OF NANOSTRUCTURES

NOTES

1. This subclass covers applications and aspects of nanostructures which are produced by any method, and is not restricted to those that are formed by manipulation of individual atoms or molecules.
2. Attention is drawn to the Note following the title of class [B82](#), which defines the meaning of the terms "nanosize", "nanoscale" and "nanostructure" in this subclass.
3. This subclass is intended to enable a comprehensive search of subject matter related to nanostructures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of nanostructures that might also be entirely or partially covered elsewhere in the IPC.
4. This subclass is for secondary classification, i.e. obligatory supplementary classification of subject matter already classified as such in other classification places, e.g. :

B82B	Nanostructures formed by individual manipulation of atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof
A61K 9/51	Nanocapsules for medicinal preparations
B05D 1/20	Langmuir-Blodgett films
C01B 32/05	Carbon nanostructures, e.g. bucky-balls, nanotubes, nanocoils, nanodoughnuts or nanoonions
G01Q	Scanning probe techniques
G02F 1/017	Optical quantum wells or boxes
H01F 10/32	Nanostructured thin magnetic films
H01F 41/30	Molecular beam epitaxy [MBE]
H10D 30/43	Quantum wire FETs
5. The classification symbols of this subclass are not listed first when assigned to patent documents.

B99 SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

B99Z SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

NOTE

This subclass covers subject matter that:

- a. Is not provided for, but is most closely related to, the subject matter covered by the subclasses of this section, and
- b. Is not explicitly covered by any subclass of another section.