

**CPC****COOPERATIVE PATENT CLASSIFICATION****B****PERFORMING OPERATIONS; TRANSPORTING****NOTE**

The following notes are meant to assist in the use of {classes [B01](#) to [B09](#) }; they must not be read as modifying in any way the elaborations.

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](#)

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

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.

4. 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 [B01D B01D](#)  
using centrifuges or free-vortex  
apparatus [B01D B04B](#) , [B04C](#)  
using magnetic or electrostatic effect [B03C B03C](#)

(c) SOLID/SOLID

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](#)

## SUBSECTION: Separating; Mixing

**B01**                    **PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS  
IN GENERAL** (furnaces, kilns, ovens, retorts in general [F27](#) )

**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](#))

**NOTE**

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;
- "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;
- "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.

For apparatus used in drying or evaporation, [F26](#) takes precedence over [B01D](#) .

Group [B01D 59/00](#) takes precedence over the other groups of this subclass and over other subclasses in class [B01](#)

**WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter

covered by these groups is classified in the following groups:

[B01D 9/09](#) covered by [B01D 9/00](#)  
[B01D 15/04](#) covered by [B01J 39/00](#) to [B01J 49/02](#)  
[B01D 17/022](#) covered by [B01D 17/0202](#)  
[B01D 17/025](#) covered by [B01D 17/02F](#)  
[B01D 17/028](#) covered by [B01D 17/0211](#)  
[B01D 17/032](#) covered by [B01D 17/0214](#)  
[B01D 17/035](#) covered by [B01D 17/02D](#)  
[B01D 17/038](#) covered by [B01D 17/0217](#)  
[B01D 17/05](#) covered by [B01D 17/04J](#)  
[B01D 17/09](#) covered by [B01D 17/005](#)  
[B01D 17/12](#) covered by [B01D 17/00](#)  
[B01D 25/133](#) covered by [B01D 25/285](#)  
[B01D 25/168](#) covered by [B01D 25/285](#)  
[B01D 25/21](#) covered by [B01D 25/164](#)  
[B01D 29/075](#) covered by [B01D 29/62](#), [B01D 29/76](#)  
[B01D 29/37](#) covered by [B01D 29/336](#), [B01D 29/356](#)  
[B01D 33/052](#) covered by [B01D 33/64](#)  
[B01D 35/01](#) covered by [B01D 36/00D](#)  
[B01D 61/26](#) covered by [A61M 1/1656](#)  
[B01D 61/34](#) covered by [A61M 1/16](#)

5. The group [B01D 24/00](#) was introduced in March 1989. This group includes subject matter of [B01D 23/00](#), [B01D 25/06](#), [B01D 25/10](#), [B01D 29/0027](#), [B01D 33/0032](#) and [B01D 33/0054](#).

6. Documents from the backlog of the group [B01D 23/00](#), and the subgroups [B01D 25/06](#), [B01D 25/10](#), [B01D 29/0027](#), [B01D 33/0032](#) and [B01D 33/0054](#) are in the process of being revised and also systematically transferred to [B01D 24/00](#).

7. The groups [B01D 29/01](#) to [B01D 29/43](#) and [B01D 29/50](#) to [B01D 29/965](#) were introduced in March 1989; these subgroups include the subject matter of the subgroups of groups [B01D 29/0002](#), which are from this date no longer use for the classification of new documents.

8. The documents from the backlog of the subgroups of group [B01D 29/0002](#) are in the process of being systematically transferred to the other subgroups of group [B01D 29/00](#).

11. The documents from the backlog of the subgroups of group [B01D 33/0003](#) are in the process of being systematically transferred to the other subgroups of group [B01D 33/00](#).

9. Groups [B01D 25/16](#), [B01D 25/18](#) and [B01D 25/20](#) are no longer used for the classification of new. Patent documents are continuously being reclassified to groups [B01D 29/44](#), [B01D 29/46](#) and [B01D 29/48](#).

10. The groups [B01D 25/04](#), [B01D 25/08](#), [B01D 25/121](#), [B01D 25/122](#), [B01D 25/124](#), [B01D 25/125](#), [B01D 25/14](#), are no longer used for classification of new documents from December 1, 2011 onwards. The backlog of those groups are being continuously reclassified to groups [B01D 25/00](#), [B01D 29/00](#) and subgroups.

## B01F

**MIXING, e.g. DISSOLVING, EMULSIFYING, DISPERSING** ( { miscellaneous implements for preparing food, e.g. machines for domestic use for mixing, egg-whisks, cream beaters [A47J 43/00](#) }; mixing paints [B44D 3/06](#); { apparatus specially adapted for

mixing radioactively contaminated material [G21F 9/008](#) }

#### **NOTE**

In this subclass, the following term or expression is used with the meaning indicated:  
- "mixing" covers stirring of a single material.

#### **WARNING**

1. The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:  
[B01F 17/02](#) to [B01F 17/56](#) covered by [B01F 17/00](#) to [B01F 17/0092](#)

## **B01J**

**CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS, COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS** (processes or apparatus for specific applications, see the relevant places for these processes or apparatus, e.g. [F26B 3/08](#))

#### **NOTE**

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.

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

#### **WARNING**

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The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:  
[B01J 37/025](#) covered by [B01J 37/02](#)

## **B01L**

**CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE** (apparatus for medical or pharmaceutical purposes [A61](#) ; apparatus for industrial purposes or laboratory apparatus whose construction and performance are comparable to that of similar industrial apparatus, see the relevant classes for industrial apparatus, particularly subclasses of [B01](#) and [C12](#) ; separating or distilling apparatus [B01D](#) ; mixing or stirring devices [B01F](#) ; atomisers [B05B](#) ; { vibrating devices, e.g.

shaking tables, } sieves [B07B](#) ; corks, bungs [B65D](#) ; handling liquids in general [B67](#) ; vacuum pumps [F04](#) ; siphons [F04F 10/00](#); taps, stop-cocks [F16K](#) ; tubes, tube joints [F16L](#) ; apparatus specially adapted for investigating or analysing materials [G01](#) , particularly [G01N](#) ; electrical or optical apparatus, see the relevant classes in Sections G and H)

#### **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.

#### **WARNING**

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

- [B01L 3/14](#) covered by [B01L 3/50](#)

Groups [B01L 1/50](#), [B01L 3/50-B01L 3/569](#), [B01L 7/50-B01L 7/54](#), [B01L 9/50-B01L 9/547](#) do not correspond to former or future IPC groups.

Concordance CPC : IPC for these groups is as follows:

- [B01L 1/50](#) : [B01L 1/00](#) - [B01L 3/50](#) - [B01L 3/502](#) : [B01L 3/00](#) - [B01L 3/5021](#) - [B01L 3/50215](#) : [B01L 3/14](#) - [B01L 3/5023](#) - [B01L 3/508](#) : [B01L 3/00](#) - [B01L 3/5082](#) - [B01L 3/50825](#) : [B01L 3/14](#) - [B01L 3/5085](#) - [B01L 3/569](#) : [B01L 3/00](#) - [B01L 7/50](#) - [B01L 7/54](#) : [B01L 7/00](#) - [B01L 9/50](#) - [B01L 9/547](#) : [B01L 9/00](#)

- 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](#) )
- B02C CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN** ( { clod-crushers for soil-working machines [A01B 17/00C](#); 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 desintegration [B29B 17/00](#); crushing raw materials in starch making [C08B 30/02](#); shredding devices for sugar beet and sugar cane [C13C 1/00](#); 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 desintegrating devices [F25C 5/02](#) } ) **C2011.10**
- 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** (separating isotopes [B01D 59/00](#); crushing or disintegrating [B02C](#) ; centrifuges or vortex apparatus for carrying out physical processes [B04](#) )

**B03B** **SEPARATING SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS** (removing fluids from solids [B01D](#) ; magnetic or electrostatic separation of solid materials from solid materials or fluids, separation by high voltage electric fields [B03C](#) ; flotation differential sedimentation [B03D](#) ; separating by dry methods [B07](#) ; screening or sifting [B07B](#) ; by picking [B07C](#) ; separating peculiar to particular materials and provided for in other single classes, see the relevant classes)

**B03C** **MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS** (filters making use of electricity or magnetism [B01D 35/06](#); separating isotopes [B01D 59/00](#); combinations of magnetic or electrostatic separation with separation of solids by other means [B03B](#) , [B07B](#) ; separating sheets from piles [B65H 3/00](#); magnets or magnet coils per se [H01F](#) )

**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**

[B03D 1/02C](#), see also [B03D 1/02](#) [B03D 1/02E](#), see also [B03D 1/02](#) [B03D 1/02L](#), see also [B03D 1/02](#) [B03D 1/02R](#), see also [B03D 1/02](#) [B03D 1/08D](#), see also [B03D 1/08](#) [B03D 1/08F](#), see also [B03D 1/08](#) [B03D 1/08T](#), see also [B03D 1/08](#) [B03D 1/14A](#), see also [B03D 1/14](#) [B03D 1/14F](#), see also [B03D 1/14](#) [B03D 1/145](#), see also [B03D 1/14](#) [B03D 1/1456](#), see also [B03D 1/14](#) [B03D 1/1462](#), see also [B03D 1/14](#) [B03D 1/1468](#), see also [B03D 1/14](#) [B03D 1/1475](#), see also [B03D 1/14](#) [B03D 1/14M](#), see also [B03D 1/14](#) [B03D 1/14S](#), see also [B03D 1/14](#) [B03D 1/24N](#), see also [B03D 1/24](#) [B03D 1/24R](#), see also [B03D 1/24](#)

**B04** **CENTRIFUGAL APPARATUS OR MACHINES FOR CARRYING-OUT PHYSICAL OR CHEMICAL PROCESSES** (using centrifugal force for the separation of particles from liquids or gases, in general [B01D](#) , e.g. [B01D 21/26](#), [B01D 43/00](#), [B01D 45/12](#))

**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.

## 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.

## B05

**SPRAYING OR ATOMISING IN GENERAL; APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL** (domestic cleaning [A47L](#); cleaning in general by methods essentially involving the use or presence of liquid [B08B 3/00](#); sand-blasting [B24C](#); coating of articles during shaping of substances in a plastic state [B29C 39/10](#), [B29C 39/18](#), [B29C 41/20](#), [B29C 41/30](#), [B29C 43/18](#), [B29C 43/28](#), [B29C 45/14](#), [B29C 47/02](#); for further classification of forming layered products, see [B32B](#); printing, copying [B41](#); conveying articles or workpieces through baths of liquid [B65G](#), e.g. [B65G 49/02](#); handling webs or filaments in general [B65H](#); surface treatment of glass by coating [C03C 17/00](#), [C03C 25/10](#); coating or impregnation of mortars, concrete, stone or ceramics [C04B 41/45](#); paints, varnishes, lacquers [C09D](#); enamelling of metals, applying a vitreous layer to metals, chemical cleaning or de-greasing of metallic objects [C23](#); electroplating [C25D](#); treating of textile materials by liquids, gases or vapours [D06B](#); laundering [D06F](#); treating roads [E01C](#); apparatus or processes for the preparation or treatment of photosensitive materials [G03](#); apparatus or processes, restricted to a purpose fully provided for in a single other class, see the relevant class covering the purpose)

#### 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** ( {  
 sprayers or atomisers specially adapted for therapeutic purposes [A61M 11/00](#) };  
 spray-mixers with nozzles [B01F 5/20](#); processes for applying liquids or other fluent  
 materials to surfaces by spraying [B05D](#) ; { nozzles specially adapted for injection  
 moulding of plastics or substances in a plastic state [B29C 45/1603](#), [B29C 45/20](#); nozzles  
 specially adapted for windscreen washers [B60S 1/52](#) }; means for pumping fluids [F04](#) ;  
 valves, e.g. water-taps, [F16K](#) )

### NOTE

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.

Attention is drawn to the Note following the title of class [B05](#) .

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

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

In this subclass, the word "container" is to be understood as the innermost enclosure containing the material to be sprayed

### WARNING

Groups [B05B 11/30](#) to [B05B 11/3098](#) do not correspond to former or current IPC groups. The concordance CPC : IPC for these groups is as follows: - [B05B 11/30](#) - 11/30V : [B05B 11/00](#)

## B05C

**APPARATUS FOR APPLYING LIQUIDS OR OTHER 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](#); processes for applying liquids or other fluent materials to surfaces [B05D](#) ; { coating of foodstuffs [A23P 1/084](#), [A23P 1/085](#), of shaped or preshaped ceramic articles [B28B 11/04](#) } )

### NOTE

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.

Attention is drawn to the Note following the title of class [B05](#) .

### **WARNING**

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

[B05C 5/04](#) covered by [B05C 5/00A](#), [B05C 11/10H](#)

## **B05D**

**PROCESSES FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL** (apparatus for applying liquids or other fluent materials to surfaces [B05B](#) , [B05C](#) ; { coating of foodstuffs [A23P 1/084](#), [A23P 1/085](#) } )

### **NOTE**

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. Attention is drawn to the Note following the title of class [B05](#) .

## **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](#) )

## **B07**

**SEPARATING SOLIDS FROM SOLIDS; SORTING** (separation in general [B01D](#) ; wet separating processes, sorting by processes using fluent material in the same way as liquid [B03](#) ; using liquids [B03B](#) , D; 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](#) ; sorting peculiar to particular materials or articles and provided for in other classes, see the relevant classes)

## **B07B**

**SEPERATING SOLIDS FROM SOLIDS BY SIEVING, SCREENING, OR SIFTING OR BY USING GAS CURRENTS; OTHER SEPARATING BY DRY METHODS APPLICABLE TO BULK MATERIAL, e.g. LOOSE ARTICLES FIT TO BE HANDLED LIKE BULK MATERIAL** (combinations of dry separating apparatus with wet separating apparatus [B03B](#) ; 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.

## **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

## **B08**

## **CLEANING**

## **B08B**

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

(brushes [A46](#) ; devices for domestic or like cleaning [A47L](#) ; { cleaning golf-clubs or golf accessories [A63B 57/0087](#); cleaning grips of bats on rackets [A63B 59/0062](#) }; separation of particles from liquids or gases [B01D](#) ; separation of solids [B03](#) , [B07](#) ; spraying or applying liquids or other fluent materials to surfaces in general [B05](#) ; cleaning devices for conveyers [B65G 45/10](#); concurrent cleaning, filling and closing of bottles [B67C 7/00](#); inhibiting corrosion or incrustation in general [C23](#) ; cleaning streets, permanent ways, beaches or land [E01H](#) ; parts, details or accessories of swimming or splash baths or pools, specially adapted for cleaning [E04H 4/16](#); preventing or removing electrostatic charges [H05F](#) )

### **NOTE**

[A61G 9/02](#), filters, semi-permeable membranes [B01D](#), castings and moulds [B22D 29/00](#), vehicles [B60S](#), coke ovens [C10B 43/00](#), building forms [E04G](#), boilers [F22](#), combustion apparatus [F23](#), furnaces [F27](#); the general nature of the cleaning, e.g. preparing for sugar manufacture [A23N](#), domestic cleaning [A47L](#), treatment of textiles [D06](#), laundry [D06F](#), air-conditioning [F24F](#); the particular operation performed, e.g. filtering [B01D](#), separating of solids [B03](#), [B07](#), sand-blasting [B24C](#); the particular apparatus or device, e.g. brushes [A46B](#), mops [A47L](#), centrifuges [B04](#), hand tools [B25](#) { devices for cleaning paint-applying hand tools after use [B44D 3/00D](#) }; the substance cleaned, e.g. metals [B21C](#), [C23](#), water [C02](#), glass [C03B](#), leather [C14B](#), textile fibres [D01](#); the substance removed (or prevented from depositing or forming) e.g. { removing paint [B44D 3/00](#), e.g. } implements or apparatus for removing dry paint from surfaces [B44D 3/16](#); chemical paint-removers [C09D 9/00](#); preventing rust [C23F](#); the substance used, e.g. macromolecular compounds or compositions [C08](#), anti-icing materials [C09K](#), detergents [C11D](#); the operation in connection with which cleaning is done, e.g. metal rolling [B21B](#), metal boring [B23B](#), soldering [B23K](#), textile fabrication [D01G](#), H, [D03J](#), [D04B](#); the surroundings of a surface to be cleaned or kept clean, e.g. water in a boiler [C02F](#), air in a room [F24F](#).

**B09****DISPOSAL OF SOLID WASTE; RECLAMATION OF CONTAMINATED SOIL**

(treatment of waste water, sewage or sludge [C02F](#); treating radioactively contaminated solids [G21F 9/28](#))

**B09B****DISPOSAL OF SOLID WASTE****NOTE**

This subclass covers only single or combined, e.g. multistage, operations not fully classifiable in a single other subclass

In this subclass the following terms or expressions are added 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

Attention is drawn to the following places:

[A23J 1/16](#) Obtaining proteins from waste water of starch manufacturing plants or like wastes

[A23K 1/06](#) Animal feeding-stuffs from distillers' or brewers' waste

[A23K 1/08](#) Animal feeding-stuffs from waste products of dairy plants

[A23K 1/10](#) Animal feeding-stuffs from kitchen waste

[A43B 1/12](#) Footwear made of rubber waste

[A61L 11/00](#) Disinfection or sterilisation methods specially adapted for refuse

[A62D 3/00](#) Chemical means for combatting harmful chemical agents; processes for making harmful chemical

agents harmless

[B01D 53/34](#) Chemical purification of smoke or fumes, e.g. flue gas

[B02C 18/40](#) Disintegrating by knives or other cutting or tearing members, which chop material into fragments, specially adapted for disintegrating

garbage, waste or sewage

[B03B 7/00](#) Combinations of wet processes or apparatus with other processes or apparatus, e.g. for dressing ores or garbage

[B03B 9/06](#) General arrangement of separating plant, e.g. flow sheets, specially adapted for refuse

[B05B 15/04](#) Control of spray area of spraying plant, e.g. masking, side shields; Means for collection or re-use of excess material

[B08B 15/00](#) Prevent escape of dirt or fumes from the area where they are produced; Collecting or removing dirt or fumes from that area

[B23D 25/14](#) Machines or arrangements for shearing stock while the latter is travelling otherwise than in the direction of the cut without regard to the exact dimensions of the resulting material, e.g. for cutting up scrap

[B27B 33/20](#) Edge trimming saw blades or tools combined with means to disintegrate waste

[B29B 17/00](#) Recovery of plastics or other constituents of waste material containing plastics

[B30B 9/32](#) Presses for consolidating scrap metal or for compacting used cars

[B63B 17/06](#) Refuse discharge from vessels, e.g. for ash { [B63B 17/00B](#) } Arrangements of installation for treating waste

water or sewage on vessels

[B65F 1/00](#) Refuse receptacles

[B65F 3/00](#) Vehicles particularly adapted for collecting refuse

[B65F 5/00](#) Gathering or removal of refuse otherwise than by receptacles or vehicles

[B65F 7/00](#) Cleaning or disinfecting devices combined with refuse receptacles or refuse vehicles

[C03C 1/00](#) Ingredients generally applicable to manufacture of glasses, glazes or vitreous enamels

[C04B 7/24](#) Hydraulic cements from oil shales, residues or waste other than slag

[C04B 11/26](#) Calcium sulfate cements from phosphogypsum or from waste, e.g. purification products of smoke

[C04B 18/04](#) Waste materials or refuse used as fillers for mortars, concrete, artificial stone or the like

[C04B 22/0006](#) Waste inorganic materials used as active ingredients for mortars, concrete, artificial stone or the like

[C04B 24/001](#) Waste organic materials used as active ingredients for mortars, concrete, artificial stone or the like

[C05F 9/00](#) Fertilisers made from household or town refuse  
[C08J 11/00](#) Recovery of waste materials of macromolecular substances

[C08L 17/00](#) Compositions of reclaimed rubber

[C10B 53/00](#) Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form

[C10B 57/00](#) Other processes not covered before; Features of destructive distillation processes in general

[C10G 1/10](#) Production of liquid hydrocarbon mixtures from

rubber or rubber waste

[C10L 5/46](#) Solid fuels essentially based on sewage, house or town refuse

[C10L 5/48](#) Solid fuels essentially based on industrial residues and waste materials

[C10M 175/02](#) Working-up used lubricants based on mineral oils

[C11B 13/00](#) Recovery of fats, fatty oils, or fatty acids from waste materials

[C11D 19/00](#) Recovery of glycerol from a saponification liquor

[C12F 3/00](#) Recovery of by-products

[C12F 3/08](#) Recovery of alcohol from press residues or other waste material

[C12P 7/08](#) Biochemical production of ethanol from waste

[C22B 7/00](#) Working-up raw materials other than ores, e.g. scrap, to produce non-ferrous metals or compounds thereof

[C22B 19/28](#) Obtaining zinc or zinc oxide from muffle furnace residues

[C22B 19/30](#) Obtaining zinc or zinc oxide from metallic residues or scrap

[C22B 25/06](#) Obtaining tin from scrap

[D01B](#) Mechanical treatment of natural fibrous or filamentary material to obtain fibres or filaments, e.g. for spinning

[D01C 5/00](#) Carbonising rags to recover animal fibres

[D01F 13/00](#) Recovery of starting material, waste material or solvents during the manufacture of artificial filaments or the like

[D01G 11/00](#) Disintegrating fibre-containing articles to obtain fibres for re-use

[D01H 11/00](#) Arrangements for confining or removing dust, fly, or the like

[D06L 1/10](#) Regeneration of used chemical baths used for dry-cleaning or washing fibres, fabrics or the like

[D21B 1/08](#) Dry treatment of waste paper or rags for making paper or for the production of cellulose

[D21B 1/32](#) Defibrating waste paper

[D21C 5/02](#) Processes for obtaining cellulose by working-up waste paper

[D21C 11/14](#) Regeneration of pulp liquors by wet combustion

[D21F 1/66](#) Re-use of pulp-water in wet end machines for making continuous webs of paper

[D21H 17/01](#) Waste products added to the pulp or used in paper-impregnating material

[E03F](#) Sewers, Cesspools

[E04F 17/10](#) Arrangements in building for the disposal of refuse

[F23B 5/00](#) Combustion apparatus arrangements for burning uncombusted material from primary combustion

[F23G](#) Consuming waste products by combustion

[F23J](#) Removal or treatment of combustion products or combustion residues

[G03C 11/24](#) Removing emulsion from waste photographic material

[H01B 15/00](#) Apparatus or processes for salvaging material from electric cables

[H01M 6/52](#) Reclaiming serviceable parts of waste cells or batteries

[H01M 10/54](#) Reclaiming serviceable parts of waste accumulators

**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](#); processes for making harmful chemical substances harmless or less harmful by effecting chemical change in the substance [A62D 3/00](#); separation in general [B01D](#) ; cleaning beaches [E01H 12/00](#); 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**

[B09C 1/04](#) covered by [B09C 1/02](#)]

**SUBSECTION: Shaping****B21**

**MECHANICAL METAL-WORKING WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL** (casting, powder metallurgy [B22](#) ; shearing [B23D](#) ; working of metal by the action of a high concentration of electric current [B23H](#) ; soldering, welding, flame-cutting [B23K](#) ; other working of metal [B23P](#) ; punching sheet material in general [B26F](#) ; processes for changing of physical properties of metals [C21D](#) , [C22F](#) ; electroforming [C25D 1/00](#))

**NOTE**

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.

Processes of a kind covered by this class but applied to non-metallic materials are classified in this class if they are applicable to metal and cannot be classified fully in another class.

**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**

**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**

**B21D**                    **WORKING OR PROCESSING OF SHEET METAL OR METAL TUBES, RODS OR PROFILES WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING** (operations of the kind involved in the manufacture of such products [B21B](#) , [B21C](#) ; working or processing of wire [B21F](#) ; cutting or severing devices or machines in general [B26](#) ; presses in general [B30B](#) )

**NOTE**

This subclass covers cutting or perforating of sheet metal or other stock material

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](#)

**B21F**                    **WORKING AND PROCESSING OF WIRE** ( { reducing diameter by } rolling of metal [B21B](#) ; by drawing, auxiliary operations used in connection with metal working without essentially removing material [B21C](#) )

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

**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.

**B21J**                    **FORGING; HAMMERING; PRESSING; 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](#) ; furnace in general [F27](#) )



**B21K**                    **MAKING FORGED OR PRESSED PRODUCTS, e.g. HORSE-SHOES, RIVETS, BOLTS, 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 chain [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.

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

**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.

**WARNING**

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

[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](#) to [B22C 15/276](#) covered by [B22C 15/23](#)  
[B22C 19/01](#) covered by [B22C 19/00](#)

**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](#) ) .

**B22F**                    **WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER** (processes

or devices for granulating materials in general [B01J 2/00](#); making ceramics by compacting or sintering [C04B](#) , e.g. [C04B 35/64](#); for the production of metals as such, see class [C22](#) ; reduction or decomposition of metal compounds in general [C22B](#) ; making alloys by powder metallurgy [C22C](#) ; electrolytic production of metal powder [C25C 5/00](#))

#### **NOTE**

This subclass covers the making of metallic powder only insofar as powder with specific physical characteristics is made;

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

- "metallic powder" covers powders containing a substantial proportion of non-metallic material;
- "powder" includes somewhat larger particles which are worked, obtained or behave in a manner similar to powder, e.g. fibres.

#### **WARNING**

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

## **B23**

**MACHINE TOOLS; METAL-WORKING NOT OTHERWISE PROVIDED FOR** (punching, perforating, making articles by processing sheet metal, tubes, or profiles [B21D](#) ; wire-working [B21F](#) ; making pins, needles, or nails [B21G](#) ; making chains [B21L](#) ; grinding [B24](#) )

#### **NOTE**

This class covers:- operations not provided for in any other class;- combinations of operations covered by different subclasses of classes [B21](#) to [B24](#) , which combinations are covered by subclass [B23P](#) , with the exception of subsidiary operations performed in conjunction with main operations covered by a single subclass;- 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 subclass in question are not restricted, in respect of those features, to the kind of machine tool with which they are primarily concerned.

In this class, the following terms or expressions are used with the meanings indicated:- "metal-working" covers the working of other materials unless the

context requires otherwise;- "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.

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](#))

### WARNING

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

[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](#)

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

#### **NOTE**

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.

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.

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.

**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

**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 [C25F](#) ; 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"

**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](#) )

**NOTE**

This subclass covers also electric circuits specially adapted for the purposes covered by the title of the subclass.

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

**WARNING**

[B23K 35/04](#) - [B23K 35/20](#) covered by [B23K 35/0205](#) - [B23K 35/0294](#)  
[B23K 35/363](#) " [B23K 35/3601](#) - [B23K 35/3618](#)

**B23P****OTHER WORKING OF METAL; COMBINED OPERATIONS;  
UNIVERSAL MACHINE TOOLS** (arrangements for copying or controlling [B23Q](#) )**NOTE**

This subclass does not cover non-mechanical operations on non-metallic materials unless such operations are specially mentioned in this subclass.

In this subclass, the following expressions are used with the meanings indicated:  
"combined operations" excludes the assembling of parts if it is an essential feature of the next metal-working operation, since it is not regarded as an operation per se.

"working of metal" and equivalent expressions include non-mechanical treatment of metal so far as it is not provided for in any other class or subclass, for example in [C21D](#) , [C22C](#) , [C22F](#) , [C23](#) . Thus, combinations of such non-mechanical treatment with other metal-working are classified in this subclass.

Attention is drawn to the Notes following the title of class [B23](#) .

**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****NOTE**

In this subclass, groups designating parts of machine tools cover machine tools characterised by constructional features of such parts.

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;
- "automatic control" is often used in the art as a synonym for regulation.

Attention is drawn to the Notes following the title of class [B23](#) .

**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**

**NOTE**

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.

Attention is drawn to Notes (1) and (2) following the title of subclass [B23F](#) .

In groups [B24B 1/00](#) to [B24B 27/00](#), in connection with glass the terms "grinding" and "polishing" are treated as being equivalent.

**B24C**

**ABRASIVE OR RELATED BLASTING WITH PARTICULATE MATERIAL**

**NOTE**

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 } 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

**B24D**

**TOOLS FOR GRINDING, BUFFING, OR SHARPENING** (tools for grinding or polishing optical surfaces on lenses or surfaces of similar shape [B24B 13/01](#); grinding heads [B24B 41/00](#); manufacture of abrasive or friction articles or shaped materials containing macromolecular substances [C08J 5/14](#); polishing compositions [C09G 1/00](#); abrasives [C09K 3/14](#))

**NOTE**

This subclass covers grinding tools for working on any material

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)

**WARNING**

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

<a href="#">B25B 23/143</a>	covered by	<a href="#">B25B 23/1422</a>
<a href="#">B25B 23/144</a>	covered by	<a href="#">B25B 23/1425</a>
<a href="#">B25B 23/151</a>	covered by	<a href="#">B25B 23/14</a> , <a href="#">B25B 23/147</a>
<a href="#">B25B 23/153</a>	covered by	<a href="#">B25B 23/1415</a>
<a href="#">B25B 23/155</a>	covered by	<a href="#">B25B 23/141</a>
<a href="#">B25B 23/157</a>	covered by	<a href="#">B25B 23/14</a>
<a href="#">B25B 23/159</a>	covered by	<a href="#">B25B 23/14</a>
<a href="#">B25B 27/067</a>	covered by	<a href="#">B25B 27/06</a>
<a href="#">B25B 27/073</a>	covered by	<a href="#">B25B 27/062</a>

**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



**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](#)) [[M1204](#) ] }

**WARNING**

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

[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](#), [F16P](#) [B25D 17/14](#) covered by [B23Q 11/0042](#) [B25D 17/16](#) covered by [B23Q 11/0042](#) [B25D 17/18](#) covered by [B23Q 11/0042](#)

**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](#) )

**NOTE**

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](#) .

**B25H**

**WORKSHOP EQUIPMENT, e.g. FOR MARKING-OUT WORK;**

**STORAGE MEANS FOR WORKSHOPS** (storing or packaging [B65](#) )**B25J****MANIPULATORS; CHAMBERS PROVIDED WITH MANIPULATION DEVICES** ( { manipulators specially adapted for use in surgery [A61B 19/22](#);

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 conveyers [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.

**WARNING**

[B25J 9/18](#) covered by [B25J 9/16](#)  
[B25J 9/22](#) " " [B25J 9/16P](#), [G05B 19/42](#)

**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](#) )

**B26D****CUTTING; DETAILS COMMON TO MACHINES FOR PERFORATING, PUNCHING, CUTTING-OUT, STAMPING-OUT OR SEVERING**

(soil-working [A01B](#) ; for growing crops or plants [A01D](#) , G; 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](#) , G; 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 [C13H](#) ; for textile materials [D06H](#) ; civil engineering, building, mining, see Section E; for light guides [G02B 6/25](#); cutting processed photographic material [G03D 15/04](#))

### **NOTE**

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.

## **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](#) )

### **NOTE**

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.

Attention is drawn to Notes (1) and (2) following the title of subclass [B26D](#) .

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

**B27B** **SAWS; 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 analogous members, in general [B23Q 1/01](#))

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

**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](#))

**B27F** **DOVETAILED WORK; TENONS; SLOTTING MACHINES; NAILING OR STAPLING MACHINES** (hand- held nailing or stapling tools [B25C](#) ; manufacture of cases, boxes, or trunks from wood [B27M 3/34](#); jointing elements [F16B](#) ) {manufacture of long strips or planks by bonding together pieces of wood, e.g. by glueing, [B27M 3/00B](#) }

### **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](#) }

**B27G** **ACCESSORY MACHINES OR APPARATUS; TOOLS; SAFETY DEVICES** e.g. **THOSE FOR SAWS** (clamping devices for mitre joints, presses for producing frames, press frames, or cages equipped with clamping devices [B25B](#) ;

woodworkers` benches [B25H](#) )

### **WARNING**

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

[B27G 17/08](#) covered by [B25D 3/00](#)

- B27H**                      **BENDING; COOPERAGE; WHEEL-MAKING**
- 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
- 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**
- B27L**                      **REMOVING BARK OR VESTIGES OF BRANCHES ([forestry A01G](#) ) ; SPLITTING WOOD; MANUFACTURE OF VENEER, WOODEN STICKS, WOOD SHAVINGS, WOOD FIBRES OR WOOD POWDER**
- B27M**                      **WORKING OF WOOD NOT PROVIDED FOR IN SUBCLASSES [B27B](#) TO [B27L](#) ; MANUFACTURE OF SPECIFIC WOODEN ARTICLES**
- 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](#) .

## **B28** WORKING CEMENT, CLAY, OR STONE

**B28B** SHAPING CLAY OR OTHER CERAMIC COMPOSITIONS, SLAG, OR 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](#) ; shaping in situ, see the relevant classes of section E)

### **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.

### **WARNING**

[B28B 23/08](#) covered by [B28B 21/60](#), [B28B 23/06](#)

**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.

## **B28D** WORKING STONE OR STONE-LIKE MATERIALS

**B29** WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL (processing doughs [A21C](#) ; working chocolate [A23G](#) ; casting of metals [B22](#) ; working cement, clay [B28](#) ; chemical aspects, see section C, particularly [C08](#) ; working glass [C03B](#) ; candle making [C11C 5/02](#); making soap [C11D 13/00](#); manufacture of artificial filaments, threads, fibres, bristles or ribbons [D01D](#) , F; manufacture of articles from cellulosic fibrous suspensions or from

[papier-mâché D21J](#) )

#### NOTE

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**

## **B29C**

**SHAPING OR JOINING OF PLASTICS; SHAPING OF SUBSTANCES IN A PLASTIC STATE, IN GENERAL; AFTER-TREATMENT OF THE SHAPED PRODUCTS, e.g. REPAIRING** ( { moulding devices for producing toilet or cosmetic sticks [A45D 40/16](#) } ; working in the manner of metal [B23](#) ; grinding, polishing [B24](#) ; cutting [B26D](#) , [B26F](#) ; 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](#))

#### NOTE

1. Attention is drawn to Note (3) following the title of class [B29](#) .
2. In this subclass:
  - repairing of articles made from plastics or substances 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 a reclassified in groups [B29C 31/00](#) to [B29C 37/00](#);
  - component parts, details, accessories or auxiliary

operations which are only of use for one specific shaping technique a reclassified only in the relevant subgroups of groups [B29C 39/00](#) to [B29C 71/00](#).

**B29D**

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

**B29K**

**INDEXING SCHEME ASSOCIATED WITH SUBCLASSES [B29B](#) , C OR D, RELATING TO MOULDING MATERIALS**

**NOTE**

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 47/0004](#), [B29C 49/0005](#), [B29C 51/002](#), [B29C 53/005](#), [B29C 55/005](#), [B29C 61/003](#), [B29C 63/0017](#) and [B29C 65/005](#)  
Copolymers are indexed with the same indexing code as the majority polymers

**WARNING**

[B29K 105/02](#), [B29K 105/22](#), [B29K 105/28](#), [B29K 105/30](#), [B29K 105/32](#) and [B29K 105/34](#) The aspect of [B29K 105/02](#) is covered by [B29K 2995/0064](#) The aspect of [B29K 105/22](#) is covered by [B29K 705/00](#) The aspect of [B29K 105/28](#) is covered by [B29K 2995/0025](#) The aspect of [B29K 105/30](#) is covered by [B29K 2995/003](#) The aspect of [B29K 105/32](#) is covered by [B29K 2995/0026](#) The aspects of [B29K 105/34](#) are covered by [B29K 2995/002](#), [B29K 2995/0007](#) and [B29K 2995/0015](#) Subclass indexes Compositions for moulding materials, condition, form or state of moulded material: B29K1 - B29K105 Compositions for reinforcements: B29K201 - B29K313 Compositions for fillers: B29K401 - B29K511 Compositions for preformed parts: B29K601 - B29K713 Compositions for moulds: B29K801 - B29K913 Properties of moulding materials, reinforcements, fillers, preformed parts or moulds: B29K995 Compositions for moulding materials; Condition, form or state of moulded material  
From the date indicated below, the following groups have been deleted from the classification scheme. The documents of these groups have been transferred to the new groups as follows :  
[B29K 105/28](#) transfered to [B29K 2995/0025](#)  
[B29K 105/30](#) transfered to [B29K 2995/003](#)  
[B29K 105/32](#) transfered to [B29K 2995/0026](#)  
[B29K 105/34](#) transfered to [B29K 2995/002](#), [B29K 2995/0007](#), [B29K00D4](#)

**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](#) [N: 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.

**B31**

**MAKING PAPER ARTICLES; WORKING PAPER** (making layered products not composed wholly of paper or cardboard [B32B](#) ; handling thin material, e.g. sheets, webs, [B65H](#) )

**NOTE**

The word "paper" in this class is to be interpreted as covering material worked in a manner analogous to paper, e.g. plastic sheet materials, laminated materials or metal foils. This class does not include making articles directly from paper pulp, which is covered by [D21J](#) .

This class is to be understood as restricted to adaptations or associations of handling sheets, webs, or blank peculiar to paper-working, e.g. bag or box making, machinery. Handling sheets, webs, or blanks of wider applicability, irrespective of whether described or claimed only for paper-working machinery, is to be regarded as of a more comprehensive nature and as such classified in [B65H](#) .

**B31B**

**MAKING BOXES, CARTONS, ENVELOPES OR BAGS** (incising, scoring, in general [B26D 3/08](#); combined making and filling [B65B](#) )

**NOTE**

In this subclass, envelopes or bags are regarded as being essentially flexible

containers, the final shape of which is determined by their contents.

In this subclass, the following expression is used with the meaning indicated:  
 - "boxes or cartons" includes bags formed similarly to cartons, trays with upstanding side-walls, barrels, tubes and cups, other than articles formed by winding.

In this subclass, it is desirable to add the indexing codes of [B31B 2201/00](#) - [B31B 2241/00N](#)

### **WARNING**

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

[B31B 7/02](#) covered by [B31B 1/02](#) [B31B 7/14](#) covered by [B31B 1/14](#)  
[B31B 7/60](#) covered by [B31B 1/60](#) [B31B 7/74](#) covered by [B31B 1/74](#)  
[B31B 9/00](#) covered by [B31B 3/00](#) [B31B 9/02](#) covered by [B31B 3/02](#)  
[B31B 9/14](#) covered by [B31B 3/14](#) [B31B 9/26](#) covered by [B31B 3/26](#)  
[B31B 9/60](#) covered by [B31B 3/60](#) [B31B 9/74](#) covered by [B31B 3/74](#)  
[B31B 11/02](#) covered by [B31B 1/02](#) [B31B 11/14](#) covered by [B31B 1/14](#) [B31B 11/26](#) covered by [B31B 1/26](#) [B31B 11/60](#) covered by [B31B 1/60](#) [B31B 11/74](#) covered by [B31B 1/74](#) [B31B 13/02](#) covered by [B31B 1/02](#) [B31B 13/14](#) covered by [B31B 1/14](#)  
[B31B 13/60](#) covered by [B31B 1/60](#) [B31B 13/74](#) covered by [B31B 1/74](#) [B31B 15/14](#) covered by [B31B 1/14](#) [B31B 15/26](#) covered by [B31B 1/26](#) [B31B 15/60](#) covered by [B31B 1/60](#) [B31B 15/74](#) covered by [B31B 1/74](#) [B31B 21/02](#) covered by [B31B 19/02](#)  
[B31B 21/14](#) covered by [B31B 19/14](#) [B31B 21/26](#) covered by [B31B 19/26](#) [B31B 21/60](#) covered by [B31B 19/60](#) [B31B 21/74](#) covered by [B31B 19/74](#) [B31B 23/02](#) covered by [B31B 19/02](#), [B31B 23/00](#)  
[B31B 23/14](#) covered by [B31B 19/14](#), [B31B 23/00](#) [B31B 23/26](#) covered by [B31B 19/26](#), [B31B 23/00](#) [B31B 23/60](#) covered by [B31B 19/60](#), [B31B 23/00](#) [B31B 23/74](#) covered by [B31B 19/74](#), [B31B 23/00](#) [B31B 25/02](#) covered by [B31B 19/02](#), [B31B 25/00](#)  
[B31B 25/14](#) covered by [B31B 19/14](#), [B31B 25/00](#) [B31B 25/26](#) covered by [B31B 19/26](#), [B31B 25/00](#) [B31B 25/60](#) covered by [B31B 19/60](#), [B31B 25/00](#) [B31B 25/74](#) covered by [B31B 19/74](#), [B31B 25/00](#) [B31B 27/02](#) covered by [B31B 19/02](#), [B31B 27/00](#)  
[B31B 27/14](#) covered by [B31B 19/14](#), [B31B 27/00](#) [B31B 27/26](#) covered by [B31B 19/26](#), [B31B 27/00](#) [B31B 27/60](#) covered by [B31B 19/60](#), [B31B 27/00](#) [B31B 27/74](#) covered by [B31B 19/74](#), [B31B 27/00](#) [B31B 29/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 29/14](#) covered by [B31B 19/14](#), [B31B 29/00](#) [B31B 29/26](#) covered by [B31B 19/26](#), [B31B 29/00](#) [B31B 31/00](#) covered by [B31B 29/00](#) [B31B 31/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 31/14](#) covered by [B31B 19/14](#), [B31B 29/00](#) [B31B 31/26](#) covered by [B31B 19/26](#), [B31B 29/00](#) [B31B 31/60](#) covered by [B31B 29/60](#) [B31B 31/74](#) covered by [B31B 29/74](#) [B31B 33/00](#) covered by [B31B 29/00](#) [B31B 33/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 33/14](#) covered by [B31B 19/14](#), [B31B 29/00](#) [B31B 33/26](#) covered by [B31B 19/26](#), [B31B 29/00](#) [B31B 33/60](#) covered by [B31B 29/60](#) [B31B 33/74](#) covered by [B31B 29/74](#) [B31B 35/00](#) covered by [B31B 29/00](#) [B31B 35/02](#) covered by [B31B 19/02](#), [B31B 29/00](#)  
[B31B 35/14](#) covered by [B31B 19/14](#), [B31B 29/00](#) [B31B 35/26](#) covered by [B31B 19/26](#), [B31B 29/00](#) [B31B 35/60](#) covered by [B31B 29/60](#) [B31B 35/74](#) covered by [B31B 29/74](#) [B31B 37/02](#) covered by [B31B 19/02](#), [B31B 37/00](#) [B31B 37/14](#) covered by [B31B 19/14](#), [B31B 37/00](#) [B31B 37/26](#) covered by [B31B 19/26](#), [B31B 37/00](#)  
[B31B 37/60](#) covered by [B31B 19/60](#), [B31B 37/00](#) [B31B 37/74](#) covered by [B31B 19/74](#), [B31B 37/00](#) [B31B 39/02](#) covered by [B31B 19/02](#), [B31B 39/00](#) [B31B 39/14](#) covered by [B31B 19/14](#), [B31B 39/00](#) [B31B 39/26](#) covered by [B31B 19/26](#), [B31B 39/00](#)  
[B31B 39/60](#) covered by [B31B 19/60](#), [B31B 39/00](#) [B31B 41/02](#) covered by [B31B 19/02](#), [B31B 41/00](#) [B31B 41/14](#) covered by

[19/14](#), [B31B 41/00](#) [B31B 41/26](#) covered by [B31B 19/26](#), [B31B 41/00](#)  
[B31B 41/60](#) covered by [B31B 19/60](#), [B31B 41/00](#) [B31B 41/74](#)  
 covered by [B31B 19/74](#), [B31B 41/00](#)

**B31C**

**MAKING WOUND ARTICLES, e.g. WOUND TUBES** (characteristics relating to the working of plastics [B29](#) )

**NOTE**

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

**B31D**

**MAKING OTHER PAPER ARTICLES** (manufacture by dry processes of articles made from particles or fibres consisting of wood or other lignocellulosic material [B27N](#) ; making layered products not composed wholly of paper or cardboard [B32B](#) ; making cardboard or paper [D21F](#) , [D21H](#) ; making articles from wood pulp [D21J](#) )

**NOTE**

This subclass covers the making, otherwise than by winding, of articles other than boxes, cartons, envelopes, bags, and tubes from paper, other than from paper pulp.

**B31F**

**MECHANICAL WORKING OR DEFORMATION OF PAPER OR CARDBOARD** (cutting, trimming, in general [B26](#) ; incising, scoring, in general [B26D 3/08](#); making layered products not composed wholly of paper or cardboard [B32B](#) ; multi-ply material of paper or cardboard, its manufacture [D21H](#) )

**B32****LAYERED PRODUCTS****B32B**

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

**NOTE**

- 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.

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.

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;
- groups designating products cover also methods or apparatus specially adapted for producing such products.

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. 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 which 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 of limited length, e.g. felt,

fleece;  
 the fibres { being } interengaged or connected, e.g. by adhesive.  
 In this subclass, - "First place rule" is used in the following groups [B32B 9/04](#),  
[B32B 11/04](#), [B32B 13/04](#), [B32B 15/04](#), [B32B 19/04](#), [B32B 21/04](#),  
[B32B 23/04C](#)-[B32B 23/12](#), [B32B 25/04](#), [B32B 27/06](#), [B32B 29/002](#). However, when  
 these groups are not characterised by the specific material adjacency to be  
 classified, then, multiple classification is given, e.g. a layered product having a stone  
 layer next to a bituminous layer would be classified in [B32B 9/04](#) and in  
[B32B 11/04](#). For a cellulosic plastic layer next to a metal layer or to a wood layer  
[B32B 23/042](#) or [B32B 23/044](#), respectively, take precedence (i.e. first rule does not  
 apply). For layered products comprising at least two ceramic layers , products  
 comprising only ceramic layers are classified in group [B32B 18/00](#) and products  
 comprising two ceramics layers and at least one layer of another material are  
 classified in [B32B 18/00](#) and [B32B 9/04](#).

### **WARNING**

The following IPC are not used in the CPC scheme Subject matter covered by  
 theses groups is classified in the following CPC groups - [B32B 1/04](#) covered by  
[B32B 3/02](#)-[B32B 3/08](#) - [B32B 1/06](#) covered by [B32B 13/02](#)-[B32B 3/08](#) - [B32B 3/22](#)  
 covered by [B32B 3/08](#)-[B2B3/22](#) - [B32B 3/24](#) covered by [B32B 3/266](#) - [B32B 5/28](#)  
 covered by [B32B 2260/021](#)-[B32B 2260/023](#) - [B32B 17/02](#) covered by  
[B32B 2262/101](#) - [B32B 17/04](#) covered by [B32B 2262/101](#) and [B32B 2260/04](#) -  
[B32B 17/12](#) covered by [B32B 17/067](#) - [B32B 23/02](#) covered by [B32B 2262/04](#) and  
[B32B 5/02](#)-[B32B 5/12](#) - [B32B 27/02](#) covered by [B32B 2262/02](#)- [B32B 2262/0292](#)  
 and [B32B 5/02](#)- [B32B 5/12](#) - [B32B 27/04](#) covered by [B32B 2260/048](#)

## **SUBSECTION: Printing**

- B41** **PRINTING; LINING MACHINES; TYPEWRITERS; STAMPS**  
 (reproduction or duplication of pictures or patterns by scanning and converting into  
 electrical signals [H04N](#) )
- B41B** **MACHINES OR ACCESSORIES FOR MAKING, SETTING, OR  
 DISTRIBUTING TYPE; TYPE; PHOTOGRAPHIC OR PHOTOELECTRIC  
 COMPOSING DEVICES** (photographic devices in general [G03](#) )
- B41C** **PROCESSES FOR THE MANUFACTURE OR REPRODUCTION OF  
 PRINTING SURFACES** (photomechanical processes for producing printing surfaces  
[G03F](#) ; photoelectrical processes for producing printing surfaces [G03G](#) )
- 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](#) )

## B41F

**PRINTING MACHINES OR PRESSES** (machines for manufacturing footwear incorporating printing or embossing apparatus [A43D](#) , e.g. [A43D 8/26](#), [A43D 95/14](#); presses in general [B30B](#) ; making of printing surfaces [B41C](#) , [B41D](#) ; manifolding devices, office printing machines [B41L](#) ; stencilling [B41L](#) , {[B44D](#) } ; printing processes not dependent on the use of special machines [B41M](#) ; duplicating or marking by sublimation or volatilisation of design [B41M 5/035](#); thermography [B41M 5/26](#); embossing decorations or marks [B44B 5/00](#); {applying transfers or decalcomanias [B44C 1/16](#) } ; handling thin or filamentary material [B65H](#) ; electrography, electrophotography, magnetography [G03G](#) )

### NOTE

[B41L](#) .

## 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](#))

## B41J

**TYPEWRITERS; SELECTIVE PRINTING MECHANISMS, { e.g. INK-JET PRINTERS, THERMAL PRINTERS }, i.e. MECHANISMS PRINTING OTHERWISE THAN FROM A FORME; CORRECTION OF TYPOGRAPHICAL ERRORS** (composing [B41B](#) ; printing on special surfaces [B41F](#) ; laundry marking [B41K](#) ; erasers, rubbers or erasing devices [B43L 19/00](#); fluid media for correction of typographical errors by coating [C09D 10/00](#); recording the results of measuring [G01](#) ; recognition or presentation of data, marking record carriers in digital fashion, e.g. by punching, [G06K](#) ; franking or ticket-printing and issuing apparatus [G07B](#) ; electric keyboard switches, in general [H01H 13/70](#), [H03K 17/94](#); coding in connection with keyboards or like devices, in general [H03M 11/00](#); receivers or transmitters for transmission of digital information [H04L](#) ; transmission or reproduction of documents, or the like, e.g. facsimile transmission, [H04N 1/00](#); printing mechanisms specially adapted for apparatus, e.g. cash registers, weighing machines, producing records of their own performance, see the relevant subclasses)

### NOTE

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.

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.

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](#) )

## **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](#) )

#### **NOTE**

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](#) .

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.

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.

**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](#) )

**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** { In this subclass the COPES System is used }

**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](#) )



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

**B42D** **BOOKS; BOOK COVERS; LOOSE LEAVES; PRINTED MATTER OF SPECIAL FORMAT OR STYLE NOT OTHERWISE PROVIDED FOR; DEVICES FOR USE THEREWITH; MOVABLE-STRIP WRITING OR READING APPARATUS** (book stands [A47B 19/00](#); book-rests [A47B 23/00](#)) <br/>

**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

**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

**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](#) )

**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](#) )

**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"

**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](#) )  
<br/>

**B44F** **SPECIAL DESIGNS OR PICTURES**

**WARNING**

[B44F 1/12](#) covered by [B42D 15/00](#)

**SUBSECTION: 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](#) to [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:

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](#)

Subclass [B60C](#) embraces the connection of valves to inflatable elastic bodies in general, and in this respect it is not limited to vehicles

Subclass [B60L](#) embraces certain electric equipment of all electrically-propelled vehicles

Subclass [B60M](#) embraces certain power supply for, but external to, any kind of electrically-propelled vehicle

Subclass [B60R](#) embraces safety belts or body harnesses used in all types of land vehicles

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](#)

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; CASTORS; AXLES; INCREASING WHEEL ADHESION****NOTE**

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

**B60C****VEHICLE TYRES (manufacture [B29](#)) ; TYRE INFLATION; TYRE**

## **CHANGING OR REPAIRING; REPAIRING, OR CONNECTING VALVES TO, INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES** (testing of tyres [G01M 17/02](#))

### **NOTE**

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

Attention is drawn to the note following the title of class B 60.

### **WARNING**

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

[B60C 11/113](#) covered by [B60C 11/08](#)  
[B60C 11/117](#) covered by [B60C 11/03](#)

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

### **NOTE**

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

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

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

### **NOTE**

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

Indexing codes [B60G 2200/00](#) to [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](#) to [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.

Groups [B60G 2200/00](#) to [B60G 2800/00](#) are to be used in multi-aspect classification, so that subject matter characterised by aspects covered by more than one of these groups, which is considered to represent information of interest for search, should be classified in a combination of at least one relevant "invention information" symbol in association with indexing codes from each of these groups.

#### **WARNING**

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

- [B60G 23/00](#) covered by [B60G 17/0165](#)

## **B60H**

### **ARRANGEMENTS OR ADAPTATIONS OF HEATING, COOLING, VENTILATING, OR OTHER AIR-TREATING DEVICES SPECIALLY FOR PASSENGER OR GOODS SPACES OF VEHICLES**

#### **NOTE**

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

## **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](#) )

#### **NOTE**

Windows, windscreens, 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](#) .

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

## **B60K**

### **ARRANGEMENT OR MOUNTING OF PROPULSION UNITS OR OF TRANSMISSIONS IN VEHICLES; ARRANGEMENT OR MOUNTING OF**

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

**NOTE**

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

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

**B60L**

**ELECTRIC EQUIPMENT OR PROPULSION OF  
ELECTRICALLY-PROPELLED VEHICLES; MAGNETIC SUSPENSION  
OR LEVITATION FOR VEHICLES; ELECTRODYNAMIC BRAKE  
SYSTEMS FOR VEHICLES, IN GENERAL** (electric coupling devices combined with mechanical couplings of vehicles [B60D 1/62](#); electric heating for vehicles [B60H](#) ; transmitting drive from electric motors to ultimate propulsive elements in vehicles [B60K](#) ; disposition of electric propulsion equipment, other than current collectors, in vehicles [B60K](#) ; auxiliary generator drives on vehicles [B60K](#) ; lighting for vehicles [B60Q](#) ; vehicle brake control systems in general [B60T](#) ; preventing wheel slip by reducing power in rail vehicles [B61C](#) ; railway track circuits in general [B61L](#) ; lighting in general [F21](#) ; [H05B](#) ; switches in general [H01H](#) ; coupling devices for electric connections in general [H01R](#) ; dynamo-electric machines [H02K](#) ; electric converters [H02M](#) ; starting, controlling, braking of electric machines or converters in general [H02P](#) ; electric heating in general [H05B](#) )

**NOTE**

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

In this subclass it is desirable to classify any "additional information" which is of interest for search.

## **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

## **B60N**

**VEHICLE PASSENGER ACCOMMODATION NOT OTHERWISE PROVIDED FOR** (furniture construction [A47](#) )

### **NOTE**

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

- "cushion": seating part of a seat distinguished from the back-rest

## **B60P**

**VEHICLES ADAPTED FOR LOAD TRANSPORTATION OR TO TRANSPORT, TO CARRY OR TO COMPRISE SPECIAL LOADS OR OBJECTS** (vehicles with special provisions for invalids [A61G 3/00](#))

### **NOTE**

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

### **WARNING**

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

[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](#)

## B60Q

**VEHICLE LIGHTING OR SIGNALLING** (arrangement of signalling or lighting devices, the mounting or supporting thereof for rail vehicles [B61D](#) , for cycles [B62J](#) , for ships [B63B](#) , for aircrafts [B64D](#) ; lighting in general, lighting devices per se [F21](#) , [H05B](#) ; signalling in general [G08](#) ; electric switches per se [H01H](#) )

### NOTE

This subclass covers also:

- electric signalling of lighting circuits so far as specially arranged in vehicles;
- arrangements or adaptations of lighting switches or signal-initiating means

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

Attention is drawn to the following places :

[B60K 28/00](#) Safety devices, e.g. sleeping driver  
[B60R25](#) Anti theft  
[B62D](#) Driving assistance  
[B62D 15/02](#) Steering aids  
[B60K 31/0008](#) Cruise control  
[F21S 48/00](#) Lighting devices or systems specially adapted for vehicles  
[G01S](#) Infra red night vision  
[G01S 13/931](#) Anti Collision  
[G05D 1/00](#) Automatic pilot  
[G06K 9/00](#) Pattern recognition  
[G06T 3/00](#) Image transformation  
[G06T 5/00](#) Image enhancement  
[G06T 7/00](#) Image analysis  
[G08B 21/00](#) Alarms in general  
[G08G](#) Traffic control  
[G08G 1/16](#) Anti-collision systems  
[H04N](#) Television systems

### WARNING

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



[B60O 1/128](#) covered by [B60O 1/124](#)  
[B60O 1/132](#) covered by [B60O 1/124](#)  
[B60O 1/136](#) covered by [B60O 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](#)

**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](#) .

**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

**WARNING**

[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](#)

## B60V

**AIR-CUSHION VEHICLES** (devices for short-distance movement of heavy loads by providing a high-pressure fluid cushion, supplied from an independent source, between load and ground [B65G 7/06](#))

### 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

## 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**

### NOTE

- (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) In groups [B60W 20/00](#) - [B60W 50/00](#), the first place priority rule is applied, i.e. at each hierarchical level, classification is made in the first appropriate place.
- (4) When classifying in group [B60W 10/00](#), classification must also be made in groups [B60W 20/00](#)-[B60W 50/00](#) in order to identify the purpose or use of the control.
- (5) 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, { three or more vehicle sub-units for groups [B60W 30/00](#)-[30/16](#) }, 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 in 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 passenger } vehicle normally under the control of a human driver for transportation on roads, e.g. an automobile, truck or bus;
  - "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.

## **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:

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 ( {load carriers } permanently attached to a continuous traction element [B65G 17/00](#));

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 (chain conveyers, scraper conveyers [B65G 17/00](#), [B65G 19/00](#));

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

## **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

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

### **NOTE**

#### **covers:**

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

non-electric features of electric locomotives

## **B61D BODY DETAILS OR KINDS OF RAILWAY VEHICLES (vehicles in general**

[B60](#) ; adaptation of vehicles to special systems [B61B](#) ; underframes [B61F](#) )

- B61F** RAIL VEHICLE SUSPENSIONS, e.g. UNDERFRAMES, BOGIES, ARRANGEMENTS OF WHEEL AXLES; RAIL VEHICLES FOR USE ON TRACKS OF DIFFERENT WIDTH; PREVENTING DERAILING; WHEEL GUARDS; OBSTRUCTION REMOVERS, OR THE LIKE (for vehicles in general [B60](#) ; axles, wheels [B60B](#) ; tyres [B60C](#) )
- B61G** COUPLINGS; DRAUGHT AND BUFFING APPLIANCES (vehicle connections in general [B60D](#) )
- B61H** BRAKES OR OTHER RETARDING APPARATUS PECULIAR TO RAIL VEHICLES; ARRANGEMENTS OR DISPOSITIONS OF BRAKES OR OTHER RETARDING APPARATUS 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](#) to [B60T 17/00](#); brakes per se [F16D](#) )
- B61J** SHIFTING OR SHUNTING OF RAIL VEHICLES (shifting vehicles in general [B60S](#) ; marshalling systems [B61B](#) )
- B61K** OTHER AUXILIARY EQUIPMENT FOR RAILWAYS (energy storing brakes [B61H](#) ; protection of permanent way against weather influences [E01B](#) ; rail cleaning, snow ploughs [E01H](#) )
- B61L** GUIDING RAILWAY TRAFFIC; ENSURING THE SAFETY OF RAILWAY TRAFFIC (power supply lines for electrically-propelled vehicles [B60M](#) ; vehicle signalling in general [B60Q](#) ; brakes or auxiliary equipment [B61H](#) , [B61K](#) ; point or crossing construction [E01B](#) ; insulated rail joints [E01B 11/54](#); optical devices in general [G02](#) ; controlling in general [G05](#) ; electric communication technique [H04](#) )
- B62** LAND VEHICLES FOR TRAVELLING OTHERWISE THAN ON RAILS
- B62B** HAND-PROPELLED VEHICLES, e.g. HAND CARTS, PERAMBULATORS; SLEDGES

#### **NOTE**

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

Rollers are taken as being equivalent to wheels

### **WARNING**

[B62B 3/065](#) covered by [B62B 3/06B4](#)

## **B62C**

### **VEHICLES DRAWN BY ANIMALS**

#### **NOTE**

This subclass covers only vehicles or parts thereof in so far as the relevant features are essential for animal-drawn vehicles.

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](#) .

## **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.

### **WARNING**

The following IPC groups are not used in the CPC scheme. Subject matter covered

by these groups is classified in the following CPC groups:

[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 10/0088](#)

## 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**

### NOTE

In this subclass, the term "cycles" also embraces scooters

### WARNING

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

[B62H 5/16](#) covered by [B62H 5/14](#)

## B62J

**CYCLE SADDLES OR SEATS; ACCESSORIES PECULIAR TO CYCLES AND NOT OTHERWISE PROVIDED FOR, e.g. ARTICLE CARRIERS, CYCLE PROTECTORS**

### NOTE

In this subclass, the term "cycles" also embraces scooters

## 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**

### NOTE

In this subclass, each of the main groups [B62K 7/00](#) to [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](#)

## 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](#)) }

### NOTE

This subclass covers only adaptations of brakes and their actuating mechanisms peculiar to their use on cycles.

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](#) .

**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.>

**B63** **SHIPS OR OTHER WATERBORNE VESSELS; RELATED EQUIPMENT**

**B63B** **SHIPS OR OTHER WATERBORNE VESSELS; EQUIPMENT FOR SHIPPING** ( { amphibious vehicles [B60F 3/00](#); } air-cushion vehicles [B60V](#) ; arrangements of vessel ventilation, heating, cooling or air conditioning [B63J 2/00](#))

**NOTE**

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

**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](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

**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](#) to [B63B 2241/00](#) are to be used for relevant technical information concerning particular or unusual use, materials, design, methods or means.

**B63H**                    **MARINE PROPULSION OR STEERING** ( { arrangement of propulsion or steering means on amphibious vehicles [B60F 3/0007](#); } propulsion of air-cushion vehicles [B60V 1/14](#); peculiar to submarines, other than nuclear propulsion, [B63G](#) ; peculiar to torpedoes [F42B 19/00](#))

**NOTE**

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

**B63J**                    **AUXILIARIES ON VESSELS**

**NOTE**

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](#)

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

**B64**                    **AIRCRAFT; AVIATION; COSMONAUTICS**

**B64B**                    **LIGHTER-THAN AIR AIRCRAFT**

**B64C**                    **AEROPLANES; HELICOPTERS** (air-cushion vehicles [B60V](#) )

**NOTE**

**WARNING**



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

- [B64C 35/02](#) covered by [B64C 35/00](#)

## B64D

### EQUIPMENT FOR FITTING IN OR TO AIRCRAFT; FLYING SUITS; PARACHUTES; ARRANGEMENTS OR MOUNTING OF POWERPLANTS OR PROPULSION TRANSMISSIONS

#### WARNING

[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

#### NOTE

In this subclass, the term "installation" embraces equipment, including mobile equipment, peculiar to use in connection with aircraft and not fitted thereto

The term "ground installations" in this subclass embraces waterborne installations

## B64G

### COSMONAUTICS; VEHICLES OR EQUIPMENT THEREFOR (apparatus for, or methods of, winning materials from extraterrestrial sources [E21C 51/00](#))

#### NOTE

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.

## 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](#); paper-bag holders as shop or office accessories [A47F 13/08](#); apparatus for coating, e.g. by dipping, [B05C](#) ; devices for tensioning and securing binders adapted to be supported by the article or articles to be bound [B25B](#) , [B65B 13/00](#); nailing or stapling devices per se [B25C](#) , [B27F](#) ; { cutting or severing in general [B26D](#) , [B26F](#) ; } inserting documents in envelopes and closing the latter [B43M 3/00](#) , [B43M 5/00](#); wrappers, containers or other packaging elements, e.g. binders protective caps [B65D](#) ; stacking articles in, or removing them from, pallets [B65G](#) ; devices for handling sheets or webs of interest apart from their application in packaging machines [B65H](#) ; packaging of matches [C06F](#) ; wrapping sugar during manufacture [C13H](#) ; { filling of grease guns [F16N 37/02](#); packing of shotgun cartridges for immediate use [F42B](#) ; wrapping of coins [G07D 9/00](#) } ; making containers or receptacles per se, see the appropriate subclasses)

### **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

### **WARNING**

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

[B65B 51/09](#) covered by [B65B 51/00](#)

## **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

**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**

(containers specially adapted for storing agricultural or horticultural products [A01F 25/14](#); containers specially adapted for use in dairies [A01J](#) ; travelling bags or baskets, suitcases [A45C](#) ; travelling or camp equipment [A45F](#) ; { linkable display containers [A47B 87/00C](#) }; household or table equipment [A47G](#) ; letter-boxes for home use [A47G 29/12](#); kitchen equipment [A47J](#) ; associated with vehicles, see the appropriate subclass of [B60](#) to [B64](#) ; machines, apparatus, or devices for, or methods of, packaging articles or materials [B65B](#) ; sack holders [B65B 67/00](#); refuse receptacles [B65F 1/00](#); handling sheets, webs or filamentary material [B65H](#) ; load-engaging elements or devices attached to lifting or lowering gear of cranes or adapted for connection therewith for transmitting lifting forces [B66C](#) ; liquid handling [B67](#) ; storing gases [F17](#) ; { packaging for photosensitive or like materials [G03](#) , e.g. [G03C 3/00](#) }; making containers, see subclasses dealing with the working of the material concerned)

**NOTE**

In this subclass, the indexing codes of [B65D 2519/00004](#) - [B65D 2519/00995](#) should be added, if applicable

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](#)

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

In this subclass, groups [B65D 5/00](#), [B65D 27/00](#), [B65D 30/00](#) 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

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 Standardization) containers, or larger containers [3]

Tamper-indicating means for containers or closures are classified in the group appropriate to the type of container or closure, e.g. [B65D 5/43](#), [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](#) [5]

### **WARNING**

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

[B65D 5/34](#) covered by [B65D 5/325](#)  
[B65D 5/35](#) covered by [B65D 5/32](#)  
[B65D 5/355](#) covered by [B65D 5/0005](#)  
[B65D 5/43](#) covered by [B65D 5/42](#)  
[B65D 5/462](#) covered by [B65D 5/46008](#) to [B65D 5/46032](#)  
[B65D 5/465](#) covered by [B65D 5/46008](#) to [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](#) & subgroups [B65D 19/24](#)

covered by [B65D 19/0004](#) & subgroups [B65D 19/26](#) covered by [B65D 19/0004](#) & subgroups [B65D 19/28](#) covered by [B65D 19/0004](#) & subgroups [B65D 19/30](#) covered by [B65D 19/0004](#) & subgroups [B65D 19/31](#) covered by [B65D 19/0004](#) & subgroups [B65D 19/34](#) covered by [B65D 19/0004](#) & subgroups [B65D 17/28](#)-[B65D 17/48](#), [B65D 17/52](#) covered by [B65D 17/16](#) to [B65D 17/26](#)  
[B65D 19/32](#) covered by [B65D 19/0002](#), [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 21/0211](#)  
[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](#) +s.gr.  
[B65D 41/01](#) covered by [B65D 41/00](#)  
[B65D 43/03](#) covered by [B65D 43/00](#) + [L65D 43/00A](#)  
[B65D 47/22](#) covered by [B65D 47/20](#)  
[B65D 47/34](#) covered by [B05B 11/00](#)  
[B65D 50/06](#) covered by [B65D 55/02E](#)  
[B65D 50/08](#) covered by [B65D 55/02](#)  
[B65D 50/10](#) covered by [B65D 55/02](#)  
[B65D 50/12](#) covered by [B65D 55/02](#)  
[B65D 50/14](#) covered by [B65D 55/02](#)  
[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](#) to [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 83/18](#)-[B65D 83/74](#) covered by [B65D 83/14](#), [B65D 83/16](#)  
[B65D 83/18](#) covered by [B65D 83/201](#)  
[B65D 83/58](#) covered by [B65D 83/44](#)  
[B65D 83/76](#) covered by [B65D 83/0005](#)  
[B65D 85/57](#) covered by [G11B 23/00](#)  
[B65D 85/575](#) covered by [G11B 23/00](#)  
[B65D 85/86](#)-[B65D 85/90](#) covered by [H01L 21/00S](#), [H05K 13/00](#)  
[B65D 91/00](#) covered by [A47G 29/12](#)

**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 19/0287](#) })

**B65G**
**TRANSPORT OR STORAGE DEVICES, e.g. CONVEYERS FOR LOADING OR TIPPING; SHOP CONVEYER SYSTEMS; PNEUMATIC TUBE CONVEYERS** ( { preventing fire in special objects or places [A62C 3/00](#) } ;

transport or storage devices used in a particular handling or treatment of articles or materials, see the relevant subclass, e.g. in metal-working [B21D 43/00](#), [B23Q 7/00](#), [B23Q 41/02](#); vehicle, railway, sea or aircraft aspects [B60](#) to [B64](#) ; in packaging [B65B](#) ;

handling thin or filamentary materials [B65H](#) ; hoisting, lifting, hauling, e.g. truck loaders [B66](#) ; handling liquids [B67](#) ; { transport or storage containers for preparing or distributing road building materials [E01C](#) ; construction or assembling of bulk storage containers employing civil engineering techniques in site or off the site [E04H 7/00](#) } ; specially adapted to underground conditions in mines [E21F 13/00](#) ; storing or distributing gases or liquids [F17](#) ; in handling radioactive materials [G21C 19/00](#))

### **WARNING**

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

[B65G 33/28](#) covered by [B65G 33/26B](#)  
[B65G 47/10](#) covered by [B65G 1/137D](#)  
[B65G 47/86](#) covered by [B65G 47/842](#), [B65G 47/847](#)  
[B65G 49/07](#) covered by [H01L 21/677](#)  
[B65G 69/32](#) covered by [B65G 69/28](#)  
[B65G 69/34](#) covered by [B65G 69/28](#)

## **B65H**

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

#### **NOTE**

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 1/02](#) Cleaning travelling work, e.g. webs, by methods involving the use of tools, brushes or like members  
[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 to [D07](#) Spinning, weaving, braiding, lace-making, knitting, sewing, making ropes or cables  
[D21F 2/00](#) Transferring webs from wet ends to press sections in paper-making  
[F26B 13/00](#) Handling fabrics, fibres, yarns or other material in long lengths in drying apparatus  
 G03B Film-strip handling or handling of pictures in apparatus for taking photographs or for projecting or viewing them  
[G06K 13/00](#) Conveying record carriers from one station to another  
[G06M 7/00](#) Counting of flat articles, e.g. sheets, carried by a conveyer  
[G11B 15/00](#) to Information storage based on relative movement  
[G11B 19/00](#), between record carrier and transducer,  
[G11B 23/00](#), involving handling record carriers for  
[G11B 25/00](#) recording or reproducing  
[H01F 41/06](#) Manufacturing coils for magnets, inductances, transformers, by winding  
[H01G 13/02](#) Machines for winding capacitors  
[H04N 1/00](#) 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

**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.

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.

### **WARNING**

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

- [B65H 35/07](#) covered by [B65H 35/0006](#) - [B65H 77/00](#) covered by [B65H 23/00](#), [B65H 59/00](#) - [B65H 83/00](#), [B65H 83/02](#) covered by [B07C 1/02C](#), [G07D 1/00D](#), [G07D 11/00](#) and s.gr - [B65H 85/00](#) covered by [G03B 27/62](#), [G03B 27/6264](#), [G03B 27/6257](#)

## **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 conveyers 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

### **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](#) )



**WARNING**

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

[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](#)

**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

**WARNING**

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

[B66D 1/395](#) covered by [B66D 1/36](#), [B66D 1/50](#)

**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](#))

**WARNING**

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

[B66F 19/02](#) covered by [B66F 19/00](#)

**B67****OPENING, CLOSING { OR CLEANING } BOTTLES, JARS OR SIMILAR CONTAINERS; LIQUID HANDLING (nozzles in general**

[B05B](#) ; packaging liquids [B65B](#) , e.g. [B65B 3/00](#); pumps in general [F04](#) ; siphons [F04F 10/00](#); valves [F16K](#) ; handling liquefied gases [F17C](#) )

**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](#) )

**WARNING**

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

[B67B 7/46](#) covered by [B67B 7/30](#) to [B67B 7/385](#)

[B67B 7/48](#) to [B67B 7/52](#) covered by [B67B 7/24](#), [B67B 7/26](#), [B67B 7/28](#)

[B67B 7/54](#) to [B67B 7/90](#) covered by [B67B 7/30](#) to [B67B 7/385](#)

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

**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](#) )

**B68**                    **SADDLERY; UPHOLSTERY**

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

**B68C**                    **SADDLES; STIRRUPS**

**B68F**                    **MAKING ARTICLES FROM LEATHER, CANVAS, OR THE LIKE**

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

**SUBSECTION:** Micro-structural technology; Nano-technology

**B81****MICRO-STRUCTURAL TECHNOLOGY****NOTE**

This class covers micro-structural 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 can not, in at least one dimension, be completely discerned without the use of an optical microscope.

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

- "micro-structural devices" covers:
  - (i) micro-mechanical devices comprising movable, flexible or deformable elements; and
  - (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 micro-electronic devices or formed from specific materials;
- "micro-structural systems" covers:
  - (i) systems of cooperating micro-structural devices; and
  - (ii) micro-electro-mechanical or micro-opto-mechanical systems, which combine on a common substrate the specific features of micro-structural devices and electrical or optical components, e.g. for controlling, analysing or signalling the functioning of micro-structural devices.

**B81B**

**MICRO-STRUCTURAL DEVICES OR SYSTEMS, e.g.  
MICRO-MECHANICAL DEVICES** (piezo-electric, electrostrictive or  
magnetostrictive elements per se [H01L 41/00](#))

**NOTE**

This subclass does not cover:

- purely electrical or electronic devices per se which are covered by section H, e.g. subclass [H01L](#) ;
- 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](#).

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.

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.

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](#)

## B81C

**PROCESSES OR APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OR TREATMENT OF MICRO-STRUCTURAL DEVICES OR SYSTEMS** (making microcapsules or microballoons [B01J 13/02](#); processes or apparatus peculiar to the manufacture or treatment of piezo-electric, electrostrictive or magnetostrictive element per se [H01L 41/22](#))

### NOTE

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](#).

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

## NANO-TECHNOLOGY

### NOTE

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

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

## B82B

**NANO-STRUCTURES FORMED BY MANIPULATION OF INDIVIDUAL ATOMS, MOLECULES, OR LIMITED COLLECTIONS OF ATOMS OR MOLECULES AS DISCRETE UNITS; MANUFACTURE OR TREATMENT THEREOF**

**NOTE**

This subclass does not cover chemical or biological nano-structures per se, provided for elsewhere, e.g. in classes [C08](#) or [C12](#) .

Attention is drawn to the Note following the title of class [B82](#) , which defines the meaning of the terms "nano-size", "nano-scale" and "nano-structure" in this subclass.

Subject matter classified in this subclass is further classified in subclass [B82Y](#) , in order to enable a comprehensive search of nano-structure technology using classification symbols of [B82Y](#) in combination with classification symbols of [B82B](#) .

Nano-structures 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](#), [H01L 29/775](#).

**B82Y**
**SPECIFIC USES OR APPLICATIONS OF NANO-STRUCTURES;  
MEASUREMENT OR ANALYSIS OF NANO-STRUCTURES;  
MANUFACTURE OR TREATMENT OF NANO-STRUCTURES**
**NOTE**

This subclass covers applications and aspects of nano-structures which are produced by any method, and is not restricted to those that are formed by manipulation of individual atoms or molecules.

Attention is drawn to the Note following the title of class [B82](#) , which defines the meaning of the terms "nano-size", "nano-scale" and "nano-structure" in this subclass.

This subclass is intended to enable a comprehensive search of subject matter related to nano-structures by combination of classification symbols of this subclass with classification symbols from other subclasses. Therefore this subclass covers aspects of nano-structures that might also be entirely or partially covered elsewhere in the IPC.

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](#) Nano - capsules for medicinal preparations  
[B05D 1/20](#) Langmuir-Blodgett films  
[C01B 31/02](#) Carbon nano-structures, e.g. bucky-balls, nanotubes, nanocoils, nano-doughnuts or nano-onions  
[G01Q](#) Scanning probe techniques  
[G02F 1/017](#) Optical quantum wells or boxes  
[H01F 10/32](#) Nano-structured thin magnetic films  
[H01F 41/30](#) Molecular beam epitaxy [MBE]  
[H01L 29/775](#) Quantum wire FETs

The classification symbols of this subclass are not listed first when assigned to patent documents.

In this subclass, multi-aspects classification is applied, so that aspects of subject matter that are covered by more than one of its groups should be classified in each of those groups.