

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](#))

Definition statement

This place covers:

Apparatus for the release or projection of drops or droplets into the atmosphere or into a chamber to form a mist or the like. The materials to be projected may be suspended in a stream of gas or vapour.

Apparatus as above, for the release or projection of streams or sprays of other fluent materials, e.g. particulate material entrained in a gas, into the atmosphere or into a chamber.

Examples of such apparatus, and subcomponents thereof covered by this subclass, include:

Nozzles, spray heads, shower heads, roses, perforated pipes, spouts or other outlets, with or without auxiliary devices such as valves or heating means.

Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements.

Electrostatic spraying apparatus or installations.

Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air or powder and gas.

Single-unit, i.e. unitary, hand-held apparatus in which flow of liquid is produced by the operator at the moment of use, e.g. by pumping, by squeezing a liquid container or by compressing a compressible bulb.

Spraying plants, e.g. with means for supporting or feeding work; spray booths.

Other spraying-type machines or apparatus, including fountains.

Means for heating, mixing or pressurising of gases, liquids or other fluent materials that are sprayed, sprinkled, misted, released or projected using the apparatus of this subclass.

Delivery control means or other details or accessories for use with the apparatus of this subclass.

Relationships with other classification places

Subclass [B05C](#) relates to apparatus for applying liquids or other fluent materials to surfaces in general. This subject matter generally relates to contact methods e.g. spreading, pouring, dipping, rubbing, using rollers, using fluidized bed techniques etc. but not to spraying or atomising apparatus which is covered by subclass [B05B](#). [B05C](#) also relates to apparatus for projecting liquids or other fluent materials onto surfaces ([B05C 5/00](#)) or to the inside of hollow work ([B05C 7/02](#)), and further to apparatus specially adapted for the projection of particulate material onto surfaces ([B05C 19/04](#)). In [B05C](#), 'projection' relates to the application of a continuous stream of liquid or other fluent (e.g. particulate) material to a surface. In [B05B](#), 'projection' relates to the release of a discontinuous stream of drops, droplets or a cloud of particulate material into the atmosphere or into a chamber to form a mist or the like.

Subclass [B05D](#) relates to processes (including processes performed by spraying) for applying liquids or other fluent materials to surfaces in general.

Other relevant large subject matter areas

[A01G](#) Irrigation

[A01M](#) Agriculture

[A23C](#) (Coating of) dairy products/cheese

[A23G](#) (Coating of) sweets/cakes

[A23L](#) (Coating of) foodstuffs

[A47J](#) Kitchen appliances

[A47K](#) Soap dispensers/showers

[A47L](#) Domestic cleaning

[A61H](#) Massage; bathing

[A61L](#) Sterilization (in particular [A61L 9/00](#))

[A61M](#) Medical devices for introducing media into or onto the body (in particular [A61M 11/00](#), [A61M 15/00](#) inhalers)

[A62C](#) Fire fighting

[B01D](#) Separation

[B01F](#) Mixing

[B01J](#) Chemical or physical process/apparatus, e.g. granulating (in particular [B01J 2/04](#), [B01J 13/04](#))

[B05C](#) Applying liquids to surfaces (apparatus)

[B05D](#) Applying liquids to surfaces (methods/chemistry)

[B06B](#) Generating vibrations

[B08B](#) Cleaning

[B21B](#) Lubricating/cooling of rolled metal

[B22F](#) Metallic powder

[B23Q](#) Cooling/lubricating machine tools/work ([B23Q 11/00](#))

[B23K](#) Welding (in particular when supplying powder)

[B24C](#) Abrasive blasting

[B25G](#) Handles in general

[B25J](#) Robots

[B26F](#) (Jet) cutting

[B29C](#) Shaping of plastics, 2 component applications

[B41J](#) Printing (in particular ink jet printing [B41J 2/00](#))

[B60S](#) Servicing/cleaning vehicles

[B65B](#) Filling containers

[B65D](#) Containers/packaging

[B65G](#) Substrate/web handling

[B67D](#) Dispensing/transferring liquids

[C23C](#) Metallization / Coating on metals

[E01C](#) Spraying / Coating/ Marking on roads

[E03C](#) Domestic plumbing

[F04B/C](#) Pumps

[F02M](#) Fuel injectors

[F15B/C](#) Fluid dynamics

[F16K](#) Valves

[F16L](#) Pipes/connections

[F16N](#) (Mist) lubrication

[F21V](#) Lightening devices (in particular [F21V 33/00](#))

[F23D](#) Burners

[F25C](#) Refrigerating (in particular artificial snow nozzles [F25C 3/04](#))

[F24F](#) Air conditioning/humidifying

[F26B](#) Drying

[F27D](#) cf. [F27D 1/1642](#): gunning of furnaces, oven (spraying refractory material)

[F41B](#) weapons (in particular water pistols (also toys) [F41B 9/00](#))

[G01F](#) dosing

References

Limiting references

This place does not cover:

Spray-mixers with nozzles	B01F 5/20
Aerosol containers	B65D 83/14
Coating metallic material; coating material with metallic material; Surface treatment of metallic material by diffusion into the surface, by chemical conversion or substitution; Coating by vacuum evaporation, by sputtering, by ion implantation or by chemical vapour deposition, in general	C23C
Drinking fountains	E03B 9/20

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Dispensing fittings for drip irrigation	A01G 25/023
Nozzles for bathing devices for special therapeutic or hygienic purposes	A61H 33/00
Sprayers or atomisers specially adapted for therapeutic purposes	A61M 11/00
Inhalators	A61M 15/00
Nozzles specially adapted for fire-extinguishing	A62C 31/02
Apparatus for spreading or distributing liquids or other fluent materials already applied to a surface with a blast of gas or vapour	B05C 11/06
Cleaning by the force of jets, e.g. blowing-out cavities	B08B 5/02
Machines or devices for abrasive blasting with particulate material	B24C 3/00
Nozzles for injection moulding	B29C 45/20
Nozzles for ink-jet printing mechanisms	B41J 2/135
Dropping or releasing powdered, liquid or gaseous matter in flight by spraying, e.g. insecticides	B64D 1/18
Nozzles for introducing articles or materials into containers or wrappers	B65B 39/00
Nozzles for delivery of liquid or semi-liquid contents by internal gaseous pressure	B65D 83/28
Filling nozzles for transferring liquid from bulk storage containers or reservoirs into vehicles or into portable containers, e.g. in vehicle service stations	B67D 7/42
Spray quenching devices	C21D 1/667
Nozzles for drilling by liquid or gas jets	E21B 7/18
Supplying combustion engines in general with combustible mixtures or constituents thereof	F02M
Atomising devices for mist lubrication	F16N 7/34
Burners	F23D

Informative references

Attention is drawn to the following places, which may be of interest for search:

Watering gardens, fields, sports grounds or the like	A01G 25/00
Dish washing or rinsing machines with spray devices	A47L 15/00
Flow mixers	B01F 5/00
Cleaning in general by methods involving the use or presence of a liquid	B08B 3/00
Making metallic powder by atomising or spraying	B22F 9/08
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
Forming layered products	B32B
Conveying articles or workpieces through baths of liquid	B65G 49/02

Surface treatment of glass by coating	C03C 17/00 , C03C 25/10
Coating or impregnation of mortars, concrete, stone or ceramics	C04B 41/45 , C04B 41/61 , C04B 41/81
Paints, varnishes, lacquers	C09D
Enamelling of metals, applying a vitreous layer to metals, chemical cleaning or degreasing of metallic objects	C23
Electroplating	C25D
Treating of textile materials by liquids, gases or vapours	D06B
Treating roads	E01C
Anti-splash devices for water taps	E03C 1/08
Means for pumping fluids	F04
Valves, e.g. water-taps	F16K
Burners using a direct spraying action of liquid droplets or vaporised liquid into the combustion space	F23D 11/00

Special rules of classification

Arrangement for cleaning discharge opening/devices/dispensing heads of apparatus belonging to subclass [B05C](#) are classified in the relevant place of [B05C](#) as well as in [B05B 15/50](#) and subgroups.

Considering the possible broad interpretation of the scope of [B05B](#), it is essential to pay attention to all references appearing in many titles of the [B05B](#) places. All devices relating to specific application fields are normally not classified in [B05B](#) unless some general function aspects are considered of relevance and are therefore (also) classified in [B05B](#).

Glossary of terms

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

Coating	The applied material. A coating may be a solidified layer originally applied as a liquid (e.g. dried paint) or a layer of material which, once applied, remains in a liquid or semi-liquid state (e.g. lubricant).
Liquid or fluent	designates materials which can flow, e.g. liquids, including solutions, dispersions and suspensions, as well as semi-liquids, pastes, melts and particulate materials.
Particulate materials	Solid materials in the form of very small pieces, e.g. powders, granules, short fibres or chips.

B05B 1/28

with integral means for shielding the discharged liquid or other fluent material, e.g. to limit area of spray; with integral means for catching drips or collecting surplus liquid or other fluent material (means for any of these purposes, per se, [B05B 12/16](#), [B05B 12/32](#), [B05B 14/00](#))

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Means for limiting the area of spray, or for the collection or re-use of excess material	B05B 12/16 , B05B 12/32 , B05B 14/00
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B05B 7/2402

{Apparatus to be carried on or by a person, e.g. by hand; Apparatus comprising containers fixed to the discharge device ([B05B 7/0012](#) takes precedence)}

Relationships with other classification places

Apparatus of the [B05B 7/00](#) type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in [B05B 7/2405+](#), [B05B 7/244+](#).

[B05B 11/00](#) takes precedence.

Apparatus of the [B05B 9/00](#) type which are to be carried on or by a person, e.g. by hand, and have a container being put under pressure are classified in [B05B 9/0805+](#).

B05B 9/08

Apparatus to be carried on or by a person, e.g. of knapsack type ({[B05B 9/0426](#), [B05B 11/00](#) take precedence } ; details or components, e.g. casings, bodies of portable power-driven tools not particularly related to the operation performed [B25F 5/00](#))

Relationships with other classification places

Apparatus of the [B05B 9/00](#) type which are to be carried on or by a person, e.g. by hand, and have a container being put under pressure are classified in [B05B 9/0805+](#).

[B05B 11/00](#) takes precedence.

Apparatus of the [B05B 7/00](#) type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in [B05B 7/2405+](#), [B05B 7/244+](#).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Details or components, e.g. casings, bodies, of portable power-driven tools not particularly related to the operation performed	B25F 5/00
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B05B 11/00

Single-unit, i.e. unitary, hand-held apparatus {comprising a container and a discharge nozzle attached thereto}, in which flow of liquid or other fluent material is produced by {the muscular energy of} the operator at the moment of use {or by an equivalent manipulator independent from the apparatus (apparatus with an external source or the possibility of permanent accumulation of pressure for discharging the liquid or fluid material [B05B 7/00](#), [B05B 9/00](#))}

Relationships with other classification places

The expression "Single-unit, i.e. unitary, hand-held apparatus comprising a container and a discharge nozzle attached thereto" is very important to properly define the border line with other areas of [B05B](#) as well as with other technical fields, e.g. [B65D](#), [A47K](#), [F04B](#).

Single-unit, i.e. unitary, hand-held apparatus in which there exists a possibility to accumulate permanently a certain pressure on the material, e.g. liquid, and wherein this pressure is used to discharge the material through the outlet are not classified in [B05B 11/00](#) and sub-groups, but in [B05B 9/0805](#) and subgroups or [B05B 7/2402](#) and subgroups.

In apparatus classified in [B05B 11/309](#) and subgroups, energy can be stored, e.g. in the form of a compressed spring. However the stored energy does not generate permanent pressure on the material for discharging the latter. Only when the spring is released is the material pressurized in the pump chamber.

In apparatus classified in [B05B 11/004](#) and sub-groups, reservoirs containing the material may be permanently pressurized, e.g. by a follower piston pushed by a spring. However this pressure is not used to discharge the material but only to feed the latter to a discharge device, e.g. a pump.

Aerosol containers are classified in [B65D 83/14](#) and subgroups.

Apparatus of the [B05B 7/00](#) type which are to be carried on or by a person, e.g. by hand, and which have a container are classified in [B05B 7/2405+](#), [B05B 7/244+](#).

Apparatus of the [B05B 9/00](#) type which are to be carried on or by a person, e.g. by hand, and have a container are classified in [B05B 9/0805+](#).

Glossary of terms

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

Pump	A device comprising a chamber into which the material is first sucked from the container through an inlet, then delivered out of the chamber, e.g. sprayed, through an outlet. Inlet and outlet can be equipped with valves.
Lift valve	A valve as defined in main group F16K 1/00 , i.e. a cut-off device with closure members having at least a component of their opening and closing motion perpendicular to the closing faces.
Gate valve or sliding valve	A valve as defined in main group F16K 3/00 , i.e. cut-off device with closing members having a sliding movement along the seat for opening and closing.

B05B 11/30**{the flow being effected by a pump}****Relationships with other classification places**

For historical and pragmatic reasons all single-units, i.e. unitary, hand-held apparatus wherein the flow is effected by a pump are classified in **B05B11/25** and subgroups, irrespective of whether the material is sprayed or simply dispensed.

This is justified by the fact that technical features of spray pumps are similar if not identical to the ones of dispensing pumps. Many patent applications do not even mention the word "spray" in the claims/description, thereby avoiding to restrict the scope of protection.

The JPO appears to classify in the same way as many single-units hand-held apparatus with dispensing pumps are classified in IPC main group [B05B 11/00](#).

A consequence of the above is that IPC group **B65D47/34** which covers a similar concept, i.e. containers having closures with discharge by pumping, does not exist in CPC, in agreement with examiners and classifiers of [B65D](#).

B05B 12/085**{responsive to flow or pressure of liquid or other fluent material to be discharged ([B05B 1/3006](#), [B05B 1/323](#), [B05B 7/1254](#) take precedence)}****References****Limiting references**

This place does not cover:

Nozzles, spray heads or other outlets with controlling element being actuated by the pressure of the fluid to be sprayed	B05B 1/3006
Nozzles, spray heads or other outlets in which a valve member forms part of the outlet opening, the valve member being actuated by the pressure of the fluid to be sprayed	B05B 1/323
Spraying apparatus for discharge of liquids or other fluent materials from two or more sources, e.g. of liquid and air, of powder and gas	B05B 7/1254

Informative references

Attention is drawn to the following places, which may be of interest for search:

Control of flow in general	G05D 7/00
Control of fluid pressure in general	G05D 16/00

B05B 12/14**for supplying a selected one of a plurality of liquids or other fluent materials {or several in selected proportions} to a {spray apparatus, e.g. to a} single spray outlet****Relationships with other classification places**

Apparatus for changing colours are classified in [B05B 12/14](#) and subgroups.

B05B 12/18

using fluids, e.g. gas streams

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Blast of gas or vapour for spreading liquids already applied to a surface	B05C 11/06
Processes for applying liquids or other fluent materials to surfaces comprising directing or stopping the fluid to be coated with air	B05D 3/042

B05B 12/20

Masking elements, i.e. elements defining uncoated areas on an object to be coated

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Stencils	B05C 17/06
Use of means for protecting parts of a surface not to be coated in processes for applying liquids or other fluent materials to surfaces	B05D 1/32
Masking means used in electroplating	C25D 5/022

B05B 12/36

Side shields, i.e. shields extending in a direction substantially parallel to the spray jet

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Nozzles with integral means for shielding	B05B 1/28
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B05B 14/20

from moving belts, e.g. filtering belts or conveying belts

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Cleaning devices for conveyors	B65G 45/10
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B05B 14/30

comprising enclosures close to, or in contact with, the object to be sprayed and surrounding or confining the discharged spray or jet but not the object to be sprayed

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Movable or portable abrasive blasting machine with suction means for the abrasive and the waste material	B24C 3/065
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B05B 14/462

and separating the excess material from the washing liquid, e.g. for recovery

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Paint detackifiers or coagulants used for the treatment of excess spraying materials	C09D 7/71
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B05B 15/30

Dip tubes

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Dip tubes for aerosol containers	B65D 83/32
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B05B 15/50

Arrangements for cleaning; Arrangements for preventing deposits, drying-out or blockage; Arrangements for detecting improper discharge caused by the presence of foreign matter

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

Arrangements for preventing or detecting clogging or moistening of ink-jet nozzles	B41J 2/165
Detecting the presence of fluid at a leakage point	G01M 3/04

B05B 15/534**by reversing the nozzle relative to the supply conduit****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Aerosol containers comprising alternative flow directions outlets	B65D 83/7532
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B05B 15/555**discharged by cleaning nozzles****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Cleaning by the force of jets or sprays in general	B08B 3/02
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B05B 15/65**Mounting arrangements for fluid connection of the spraying apparatus or its outlets to flow conduits****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Joints in general	F16L 13/00 - F16L 37/00
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B05B 15/652**whereby the jet can be oriented****References*****Informative references****Attention is drawn to the following places, which may be of interest for search:*

Single-unit, i.e. unitary, hand-held apparatus provided with a movable dispensing tube	B05B 11/0091
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B05B 15/70

Arrangements for moving spray heads automatically to or from the working position

References***Informative references***

Attention is drawn to the following places, which may be of interest for search:

Nozzles for cleaning vehicle windscreens or optical devices materials to surfaces	B60S 1/52
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B05B 16/00

Spray booths (arrangements for collecting, re-using or eliminating excess spraying material in spray booths [B05B 14/40](#))

References***Informative references***

Attention is drawn to the following places, which may be of interest for search:

Enclosures, e.g. booths, for applying liquids or other fluent materials to surfaces	B05C 15/00
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