

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B05 SPRAYING OR ATOMISING IN GENERAL; APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL**B05B SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES** (spray-mixers with nozzles B01F 25/72; processes for applying liquids or other fluent materials to surfaces by spraying B05D) [2]**Note(s) [2]**

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.

Subclass index

APPARATUS CHARACTERISED BY THEIR STRUCTURE.....	3/00, 9/00, 11/00
APPARATUS FOR DISCHARGE OF FLUIDS FROM TWO OR MORE SOURCES.....	7/00
ELECTROSTATIC OR ELECTRIC APPARATUS.....	5/00
APPARATUS CHARACTERISED BY MANIPULATION THEREOF.....	11/00, 13/00
ARRANGEMENTS FOR COLLECTING, RE-USING OR ELIMINATING EXCESS SPRAYING MATERIAL.....	14/00
SPRAY BOOTHS.....	16/00
OTHER APPARATUS.....	17/00
OUTLETS OR OTHER DETAILS.....	1/00, 15/00
DELIVERY CONTROL.....	12/00

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|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1/00 | Nozzles, spray heads or other outlets, with or without auxiliary devices such as valves, heating means (B05B 3/00, B05B 5/00, B05B 7/00 take precedence; devices for applying liquids or other fluent materials to surfaces by contact B05C; nozzles for ink-jet printing mechanisms B41J 2/135; nozzles for liquid-dispensing, e.g. in vehicle service stations, B67D 7/42) [1, 2006.01] | 1/26 | • with means for mechanically breaking-up or deflecting the jet after discharge, e.g. with fixed deflectors; Breaking-up the discharged liquid or other fluent material by impinging jets [1, 2006.01] |
| 1/02 | • designed to produce a jet, spray, or other discharge of particular shape or nature, e.g. in single drops (B05B 1/26, B05B 1/28, B05B 1/34 take precedence) [1, 2006.01] | 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 [1, 2006.01] |
| 1/04 | • • in flat form, e.g. fan-like, sheet-like [1, 2006.01] | 1/30 | • designed to control volume of flow, e.g. with adjustable passages [1, 2006.01] |
| 1/06 | • • in annular, tubular or hollow conical form [1, 2006.01] | 1/32 | • • in which a valve member forms part of the outlet opening [1, 2006.01] |
| 1/08 | • • of pulsating nature, e.g. delivering liquid in successive separate quantities [1, 2006.01] | 1/34 | • designed to influence the nature of flow of the liquid or other fluent material, e.g. to produce swirl (designed to control volume of flow B05B 1/30) [1, 2006.01] |
| 1/10 | • • in the form of a fine jet, e.g. for use in wind-screen washers [1, 2006.01] | 1/36 | • Outlets for discharging by overflow [1, 2006.01] |
| 1/12 | • capable of producing different kinds of discharge, e.g. either jet or spray (having selectively-effective outlets B05B 1/16) [1, 2006.01] | 3/00 | Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements [1, 2006.01] |
| 1/14 | • with multiple outlet openings (B05B 1/02, B05B 1/26 take precedence); with strainers in or outside the outlet opening [1, 2006.01] | 3/02 | • with rotating elements (electric spraying discharge apparatus characterised by having rotary outlet or deflecting elements B05B 5/04) [1, 2006.01] |
| 1/16 | • • having selectively-effective outlets [1, 2006.01] | 3/04 | • • driven by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet [1, 2006.01] |
| 1/18 | • • Roses; Shower heads [1, 2006.01] | 3/06 | • • • by jet reaction [1, 2006.01] |
| 1/20 | • • Perforated pipes or troughs, e.g. spray booms; Outlet elements therefor [1, 2006.01] | 3/08 | • • in association with stationary outlet or deflecting elements [1, 2006.01] |
| 1/22 | • Spouts (anti-splash devices for water-taps E03C 1/08) [1, 2006.01] | 3/10 | • • discharging over substantially the whole periphery of the rotating member [1, 2006.01] |
| 1/24 | • incorporating means for heating the liquid or other fluent material, e.g. electrically [1, 2006.01] | | |

- 3/12 • • with spray booms or the like rotating around an axis by means independent of the liquid or other fluent material discharged [1, 2006.01]
- 3/14 • with oscillating elements; with intermittent operation [1, 2006.01]
- 3/16 • • driven or controlled by the liquid or other fluent material discharged, e.g. the liquid actuating a motor before passing to the outlet [1, 2006.01]
- 3/18 • with elements moving in a straight line, e.g. along a track; Mobile sprinklers [1, 2, 2006.01]
- 5/00 Electrostatic spraying apparatus; Spraying apparatus with means for charging the spray electrically; Apparatus for spraying liquids or other fluent materials by other electric means [1, 2006.01]**
- 5/025 • Discharge apparatus, e.g. electrostatic spray guns [5, 2006.01]
- 5/03 • • characterised by the use of gas [5, 2006.01]
- 5/035 • • characterised by gasless spraying [5, 2006.01]
- 5/04 • • characterised by having rotary outlet or deflecting elements [1, 2006.01]
- 5/043 • • using induction-charging [5, 2006.01]
- 5/047 • • using tribo-charging [5, 2006.01]
- 5/053 • • Arrangements for supplying power, e.g. charging power [5, 2006.01]
- 5/057 • • Arrangements for discharging liquids or other fluent material without using a gun or nozzle [5, 2006.01]
- 5/06 • using electric arc [1, 2006.01]
- 5/08 • Plant for applying liquids or other fluent materials to objects [1, 2006.01]
- 5/10 • • Arrangements for supplying power, e.g. charging power (in discharge apparatus B05B 5/053) [5, 2006.01]
- 5/12 • • specially adapted for coating the interior of hollow bodies [5, 2006.01]
- 5/14 • • specially adapted for coating continuously moving elongated bodies, e.g. wires, strips, pipes [5, 2006.01]
- 5/16 • Arrangements for supplying liquids or other fluent material [5, 2006.01]
- 7/00 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 3/00, B05B 5/00 take precedence) [1, 2006.01]**
- 7/02 • Spray pistols; Apparatus for discharge (for spraying particulate material B05B 7/14; with means for heating the material to be sprayed B05B 7/16; with means for supplying fluent material to a discharge device B05B 7/24) [1, 2006.01]
- 7/04 • • with arrangements for mixing liquids or other fluent materials before discharge [1, 2, 2006.01]
- 7/06 • • with one outlet orifice surrounding another approximately in the same plane (B05B 7/10 takes precedence) [1, 2006.01]
- 7/08 • • with separate outlet orifices, e.g. to form parallel jets, to form intersecting jets [1, 2006.01]
- 7/10 • • producing a swirling discharge [1, 2006.01]
- 7/12 • • designed to control volume of flow, e.g. with adjustable passages [1, 2006.01]
- 7/14 • designed for spraying particulate materials (B05B 7/16 takes precedence) [1, 2006.01]
- 7/16 • incorporating means for heating the material to be sprayed [1, 2006.01]
- 7/18 • • the material having originally the shape of a wire, rod, or the like [1, 2006.01]
- 7/20 • • by flame or combustion [1, 2006.01]
- 7/22 • • electrically, e.g. by arc [1, 2006.01]
- 7/24 • with means, e.g. a container, for supplying liquid or other fluent material to a discharge device (B05B 7/14, B05B 7/16, B05B 11/00 take precedence) [1, 2006.01]
- 7/26 • • Apparatus in which liquids or other fluent materials from different sources are brought together before entering the discharge device [1, 2006.01]
- 7/28 • • • in which one liquid or other fluent material is fed or drawn through an orifice into a stream of a carrying fluid [1, 2006.01]
- 7/30 • • • • the first liquid or other fluent material being fed by gravity, or sucked into the carrying fluid [1, 2006.01]
- 7/32 • • • • the fed liquid or other fluent material being under pressure [1, 2006.01]
- 9/00 Spraying apparatus for discharge of liquid or other fluent material without essentially mixing with gas or vapour (B05B 11/00 takes precedence) [1, 3, 2006.01]**
- 9/01 • Spray pistols (B05B 9/03 takes precedence) [3, 2006.01]
- 9/03 • characterised by means for supplying liquid or other fluent material [3, 2006.01]
- 9/04 • • with pressurised or compressible container (aerosol containers B65D 83/14); with pump [1, 3, 2006.01]
- 9/043 • • • having pump readily separable from container [2, 3, 2006.01]
- 9/047 • • • supply being effected by follower in container, e.g. membrane or floating piston [2, 3, 2006.01]
- 9/06 • • • the delivery being related to the movement of a vehicle, e.g. the pump being driven by a vehicle wheel [1, 3, 2006.01]
- 9/08 • • • Apparatus to be carried on or by a person, e.g. of knapsack type [1, 3, 4, 2006.01]
- 11/00 Single-unit hand-held apparatus in which flow of contents is produced by the muscular force of the operator at the moment of use [1, 2, 2006.01, 2023.01]**
- 11/01 • characterised by the means producing the flow [2023.01]
- 11/02 • • Membranes or pistons acting on the contents inside the container, e.g. follower pistons [2, 2006.01, 2023.01]
- 11/04 • • Deformable containers producing the flow, e.g. squeeze bottles [2, 2006.01]
- 11/06 • • Gas or vapour producing the flow, e.g. from a compressible bulb or air pump [2, 3, 2006.01]
- 11/10 • • Pump arrangements for transferring the contents from the container to a pump chamber by a sucking effect and forcing the contents out through the dispensing nozzle [2023.01]
- 12/00 Arrangements for controlling delivery; Arrangements for controlling the spray area [2, 2006.01, 2018.01]**
- 12/02 • for controlling time, or sequence, of delivery [2, 2006.01]
- 12/04 • • for sequential operation or multiple outlets [2, 2006.01]
- 12/06 • • for effecting pulsating flow [2, 2006.01]
- 12/08 • responsive to condition of liquid or other fluent material discharged, of ambient medium or of target [2, 2006.01]

- 12/10 • • responsive to temperature or viscosity of liquid or other fluent material discharged [2, 2006.01]
- 12/12 • • responsive to conditions of ambient medium or target, e.g. humidity, temperature [2, 2006.01]
- 12/14 • for supplying a selected one of a plurality of liquids or other fluent materials to a single spray outlet [3, 2006.01]
- 12/16 • for controlling the spray area (B05B 3/00 takes precedence) [2018.01]
- 12/18 • • using fluids, e.g. gas streams [2018.01]
- 12/20 • • Masking elements, i.e. elements defining uncoated areas on an object to be coated [2018.01]
- 12/22 • • • movable relative to the spray area [2018.01]
- 12/24 • • • made at least partly of flexible material, e.g. sheets of paper or fabric [2018.01]
- 12/26 • • • for masking cavities [2018.01]
- 12/28 • • • for defining uncoated areas that are not enclosed within coated areas or vice versa, e.g. for defining U-shaped border lines [2018.01]
- 12/30 • • • specially adapted for vehicle wheels [2018.01]
- 12/32 • • Shielding elements, i.e. elements preventing overspray from reaching areas other than the object to be sprayed (nozzles with integral shielding elements B05B 1/28) [2018.01]
- 12/34 • • • movable relative to the spray area [2018.01]
- 12/36 • • • Side shields, i.e. shields extending in a direction substantially parallel to the spray jet [2018.01]
- 13/00 Machines or plants for applying liquids or other fluent materials to surfaces of objects or other work by spraying, not covered by groups B05B 1/00-B05B 11/00** (processes for applying liquids or other fluent materials to surfaces in general B05D; means for supplying or discharging liquid or other fluent material for this purpose, see the relevant one of groups B05B 1/00-B05B 12/00) [1, 3, 2006.01]
- 13/02 • Means for supporting work; Arrangement or mounting of spray heads; Adaptation or arrangement of means for feeding work (B05B 13/06 takes precedence) [1, 2006.01]
- 13/04 • • the spray heads being moved during operation [1, 2006.01]
- 13/06 • specially designed for treating the inside of hollow bodies (spray heads B05B 1/00-B05B 7/00) [1, 2006.01]
- 14/00 Arrangements for collecting, re-using or eliminating excess spraying material** (arrangements integral with nozzles B05B 1/28) [2018.01]
- 14/10 • the excess material being particulate (for spray booths B05B 14/48) [2018.01]
- 14/20 • from moving belts, e.g. filtering belts or conveying belts [2018.01]
- 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 [2018.01]
- 14/40 • for use in spray booths [2018.01]
- 14/41 • • by cleaning the walls of the booth [2018.01]
- 14/42 • • using electrostatic means [2018.01]
- 14/43 • • by filtering the air charged with excess material [2018.01]
- 14/435 • • • with means for cleaning the filters by gas flow, e.g. blasts of air [2018.01]
- 14/44 • • using walls specially adapted for promoting separation of the excess material from the air, e.g. baffle plates (using wetted walls B05B 14/465) [2018.01]
- 14/45 • • using cyclone separators [2018.01]
- 14/46 • • by washing the air charged with excess material [2018.01]
- 14/462 • • • and separating the excess material from the washing liquid, e.g. for recovery [2018.01]
- 14/465 • • • using substantially vertical liquid curtains or wetted walls behind the object to be sprayed [2018.01]
- 14/468 • • • with scrubbing means arranged below the booth floor [2018.01]
- 14/48 • • specially adapted for particulate material [2018.01]
- 14/49 • • specially adapted for solvents [2018.01]
- 15/00 Details of spraying plant or spraying apparatus not otherwise provided for; Accessories** [1, 4, 2006.01, 2018.01]
- 15/14 • Arrangements for preventing or controlling structural damage to spraying apparatus or its outlets, e.g. for breaking at desired places; Arrangements for handling or replacing damaged parts [2018.01]
- 15/16 • • for preventing non-intended contact between spray heads or nozzles and foreign bodies, e.g. nozzle guards [2018.01]
- 15/18 • • for improving resistance to wear, e.g. inserts or coatings; for indicating wear; for handling or replacing worn parts [2018.01]
- 15/20 • Arrangements for agitating the material to be sprayed, e.g. for stirring, mixing or homogenising [2018.01]
- 15/25 • • using moving elements, e.g. rotating blades [2018.01]
- 15/30 • Dip tubes [2018.01]
- 15/33 • • weighted [2018.01]
- 15/37 • • with decorative elements [2018.01]
- 15/40 • Filters located upstream of the spraying outlets [2018.01]
- 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 [2018.01]
- 15/52 • • for removal of clogging particles [2018.01]
- 15/522 • • • using cleaning elements penetrating the discharge openings [2018.01]
- 15/525 • • • by increasing the cross section of the discharge openings [2018.01]
- 15/528 • • • by resilient deformation of the nozzle [2018.01]
- 15/531 • • • using backflow [2018.01]
- 15/534 • • • • by reversing the nozzle relative to the supply conduit [2018.01]
- 15/55 • • using cleaning fluids [2018.01]
- 15/555 • • • discharged by cleaning nozzles [2018.01]
- 15/58 • • preventing deposits, drying-out or blockage by recirculating the fluid to be sprayed from upstream of the discharge opening back to the supplying means [2018.01]
- 15/60 • Arrangements for mounting, supporting or holding spraying apparatus [2018.01]
- 15/62 • • Arrangements for supporting spraying apparatus, e.g. suction cups [2018.01]
- 15/622 • • • ground-penetrating [2018.01]
- 15/625 • • • designed to be placed on the ground [2018.01]
- 15/628 • • • of variable length [2018.01]

B05B

- 15/63 • • Handgrips **[2018.01]**
- 15/65 • • Mounting arrangements for fluid connection of the spraying apparatus or its outlets to flow conduits **[2018.01]**
- 15/652 • • • whereby the jet can be oriented **[2018.01]**
- 15/654 • • • • using universal joints **[2018.01]**
- 15/656 • • • whereby the flow conduit length is changeable **[2018.01]**
- 15/658 • • • the spraying apparatus or its outlet axis being perpendicular to the flow conduit **[2018.01]**
- 15/68 • • Arrangements for adjusting the position of spray heads (B05B 15/628, B05B 15/652, B05B 15/656 take precedence) **[2018.01]**
- 15/70 • Arrangements for moving spray heads automatically to or from the working position **[2018.01]**
- 15/72 • • using hydraulic or pneumatic means **[2018.01]**
- 15/74 • • • driven by the discharged fluid **[2018.01]**
- 15/80 • Arrangements in which the spray area is not enclosed, e.g. spray tables **[2018.01]**
- 16/00 Spray booths** (arrangements for collecting, re-using or eliminating excess spraying material in spray booths B05B 14/40) **[2018.01]**
- 16/20 • Arrangements for spraying in combination with other operations, e.g. drying; Arrangements enabling a combination of spraying operations **[2018.01]**
- 16/25 • • for both automatic and manual spraying **[2018.01]**
- 16/40 • Construction elements specially adapted therefor, e.g. floors, walls or ceilings (ceiling elements filtering inflow of air into the booth B05B 16/60; walls specially adapted for promoting separation of excess material B05B 14/44) **[2018.01]**
- 16/60 • Ventilation arrangements specially adapted therefor **[2018.01]**
- 16/80 • Movable spray booths **[2018.01]**
- 17/00 Apparatus for spraying or atomising liquids or other fluent materials, not covered by any other group of this subclass** (dropping or releasing powdered, liquid or gaseous matter in flight B64D 1/16) **[1, 2, 2006.01]**
- 17/04 • operating with special methods **[1, 2006.01]**
- 17/06 • • using ultrasonic vibrations **[1, 2006.01]**
- 17/08 • Fountains (drinking fountains E03B 9/20; wash fountains E03C 1/16) **[1, 2006.01]**