SECTION B — PERFORMING OPERATIONS; TRANSPORTING

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

B05B **SPRAYING APPARATUS; ATOMISING APPARATUS; NOZZLES** (spray-mixers with nozzles B01F 5/20; 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

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]**

1/02 • 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]**

1/04 • • in flat form, e.g. fan-like, sheet-like **[1, 2006.01]**

1/06 • • in annular, tubular or hollow conical form **[1, 2006.01]**

1/08 • • of pulsating nature, e.g. delivering liquid in successive separate quantities **[1, 2006.01]**

1/10 • • in the form of a fine jet, e.g. for use in wind-screen washers **[1, 2006.01]**

1/12 • capable of producing different kinds of discharge, e.g. either jet or spray (B05B 1/16 takes precedence) **[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]**

1/16 • • having selectively-effective outlets **[1, 2006.01]**

1/18 • • Roses; Shower heads **[1, 2006.01]**

1/20 • • Perforated pipes or troughs, e.g. spray booms; Outlet elements therefor **[1, 2006.01]**

1/22 • Spouts (anti-splash devices for water-taps E03C 1/08) **[1, 2006.01]**

1/24 • incorporating means for heating the liquid or other fluent material, e.g. electrically **[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]**

1/28 • 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]**

1/30 • designed to control volume of flow, e.g. with adjustable passages (B05B 1/02 takes precedence) **[1, 2006.01]**

1/32 • • in which a valve member forms part of the outlet opening **[1, 2006.01]**

1/34 • designed to influence the nature of flow of the liquid or other fluent material, e.g. to produce swirl (B05B 1/30 takes precedence) **[1, 2006.01]**

1/36 • Outlets for discharging by overflow **[1, 2006.01]**

3/00 **Spraying or sprinkling apparatus with moving outlet elements or moving deflecting elements** (B05B 5/00 takes precedence) **[1, 2006.01]**

3/02 • with rotating elements **[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]**

3/06 • • • by jet reaction **[1, 2006.01]**

3/08 • • in association with stationary outlet or deflecting elements **[1, 2006.01]**

3/10 • • discharging over substantially the whole periphery of the rotating member **[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 (B05B 5/053 takes precedence) **[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 (B05B 7/14, B05B 7/16, B05B 7/24 take precedence) **[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, i.e. unitary, hand-held apparatus in which flow of liquid or other fluent material is produced by the operator at the moment of use [1, 2, 2006.01]

11/02 • the flow being effected by a follower, e.g. membrane, floating piston, in container for liquid or other fluent material **[2, 2006.01]**

11/04 • the flow being effected by deformation of container for liquid or other fluent material **[2, 2006.01]**

11/06 • the spray being effected by gas or vapour flow, e.g. from a compressible bulb **[2, 3, 2006.01]**

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]***

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]**