

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

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

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.

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
- [B01L 3/14](#) covered by [B01L 3/50](#)
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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|-------------|---|--------|--|
| 1/00 | Enclosures; Chambers (fume cupboards B08B ; provided with manipulation devices, glove boxes B25J ; cooling chambers F25D) | 3/0217 | . . . {of the plunger pump type (medical syringes A61M)} |
| 1/02 | . Air-pressure chambers; Air-locks therefor | 3/022 | . . . {Capillary pipettes, i.e. having very small bore (B01L 3/0224 - B01L 3/0237 take precedence)} |
| 1/025 | . . {Environmental chambers (incubators for culturing cells C12M 41/14 , Test chambers to test weather resistance G01N 17/002)} | 3/0224 | . . . {having mechanical means to set stroke length, e.g. movable stops (B01L 3/0231 , B01L 3/0234 take precedence)} |
| 1/04 | . Dust-free rooms or enclosures {(clean rooms suitable for industrial purposes F24F 3/161)} | 3/0227 | . . . {Details of motor drive means (B01L 3/0231 , B01L 3/0234 take precedence)} |
| 1/50 | . {for storing hazardous materials in the laboratory, e.g. cupboards, waste containers} | 3/0231 | . . . {having several coaxial pistons} |
| 3/00 | Containers or dishes for laboratory use, e.g. laboratory glassware (bottles B65D ; apparatus for enzymology or microbiology {specially adapted for culturing} C12M 1/00); Droppers (receptacles for volumetric purposes G01F) | 3/0234 | . . . {Repeating pipettes, i.e. for dispensing multiple doses from a single charge} |
| 3/02 | . Burettes; Pipettes | 3/0237 | . . . {Details of electronic control, e.g. relating to user interface} |
| 3/0203 | . . {Burettes, i.e. for withdrawing and redistributing liquids through different conduits} | 3/0241 | . . {Drop counters; Drop formers (making arrays for combinatorial libraries B01J 19/0046 ; automation of dispensing for analysis G01N 35/10)} |
| 3/0206 | . . . {of the plunger pump type} | 3/0244 | . . . {using pins} |
| 3/021 | . . {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids} | 3/0248 | . . . {Prongs, quill pen type dispenser} |
| 3/0213 | . . . {Accessories for glass pipettes; Gun-type pipettes, e.g. safety devices, pumps} | 3/0251 | . . . {Pin and ring type or pin in tube type dispenser} |
| | | 3/0255 | . . . {characterized by the form or material of the pin tip} |
| | | 3/0258 | . . . {using stamps} |

- 3/0262 . . . {using touch-off at substrate or container}
- 3/0265 . . . {using valves to interrupt or meter fluid flow, e.g. using solenoids or metering valves}
- 3/0268 . . . {using pulse dispensing or spraying, eg. inkjet type, piezo actuated ejection of droplets from capillaries}
- 3/0272 . . . {Dropper bottles}
- 3/0275 . . {Interchangeable or disposable dispensing tips}
- 3/0279 . . . {co-operating with positive ejection means}
- 3/0282 . . {mounted within a receptacle ([wash bottles B01L 3/10](#))}
- 3/0286 . . {Ergonomic aspects, e.g. form or arrangement of controls}
- 3/0289 . . {Apparatus for withdrawing or distributing predetermined quantities of fluid ([B01L 3/02](#) takes precedence; sample taking [G01N 1/00](#); sample taking within automatic analysers [G01N 35/00](#); volume measuring in general [G01F](#))}
- 3/0293 . . . {for liquids}
- 3/0296 . . . {from piercable tubing, e.g. in extracorporeal blood sampling}
- 3/04 . Crucibles
- 3/06 . Crystallising dishes
- 3/08 . Flasks ([specially adapted for distillation B01D {B01D 3/10}](#))
- 3/10 . Wash bottles
- 3/12 . Gas jars or cylinders
- 3/14 . Test tubes {(devices for taking samples of blood (*Frozen*) [A61B 5/15](#))}

WARNING

Group [B01L 3/14](#) is no longer used for the classification of documents as of August 1, 2018. The content of this group is being reclassified into groups [B01L 3/50](#), [B01L 3/502](#), [B01L 3/5021](#), [B01L 3/50215](#), [B01L 3/5023](#), [B01L 3/5025](#), [B01L 3/50255](#), [B01L 3/5027](#), [B01L 3/502707](#), [B01L 3/502715](#), [B01L 3/502723](#), [B01L 3/50273](#), [B01L 3/502738](#), [B01L 3/502746](#), [B01L 3/502753](#), [B01L 3/502761](#), [B01L 3/502769](#), [B01L 3/502776](#), [B01L 3/502784](#), [B01L 3/502792](#), [B01L 3/5029](#), [B01L 3/505](#), [B01L 3/5055](#), [B01L 3/508](#), [B01L 3/5082](#), [B01L 3/50825](#), [B01L 3/5085](#), [B01L 3/50851](#), [B01L 3/50853](#), [B01L 3/50855](#), [B01L 3/50857](#), and [B01L 3/5088](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 3/16 . Retorts
- 3/18 . Spatulas
- 3/50 . {Containers for the purpose of retaining a material to be analysed, e.g. test tubes (devices for taking samples of blood [A61B 5/15](#))}

WARNING

Groups [B01L 3/50](#) - [B01L 3/5088](#) are incomplete pending reclassification of documents from group [B01L 3/14](#).

Group [B01L 3/14](#) should also be considered in order to perform a complete search.

- 3/502 . . {with fluid transport, e.g. in multi-compartment structures ([centrifugal-type cuvettes G01N 21/07](#); analysis by separation into components [G01N 30/00](#); automatic analysers [G01N 35/00](#))}
- 3/5021 . . . {Test tubes specially adapted for centrifugation purposes ([centrifuges B04B 5/04](#))}
- 3/50215 {using a float to separate phases}
- 3/5023 . . . {with a sample being transported to, and subsequently stored in an absorbent for analysis}
- 3/5025 . . . {for parallel transport of multiple samples}
- 3/50255 {Multi-well filtration}
- 3/5027 . . . {by integrated microfluidic structures, i.e. dimensions of channels and chambers are such that surface tension forces are important, e.g. lab-on-a-chip ([B01L 3/5023](#) takes precedence; micromixers [B01F 13/0059](#); microreactors for synthesis [B01J 19/0093](#); microcapillary devices in general [B81B 1/00](#))}
- 3/502707 {characterised by the manufacture of the container or its components (manufacture of microstructural devices in general [B81C](#); by shaping or joining plastic parts [B29C 59/00](#) [B29C 65/00](#), by laminating [B32B 37/00](#))}
- 3/502715 {characterised by interfacing components, e.g. fluidic, electrical, optical or mechanical interfaces}
- 3/502723 {characterised by venting arrangements}
- 3/50273 {characterised by the means or forces applied to move the fluids (micropumps [F04B 19/006](#), of the membrane type [F04B 43/043](#))}
- 3/502738 {characterised by integrated valves (microvalves [F16K 99/0001](#))}
- 3/502746 {characterised by the means for controlling flow resistance, e.g. flow controllers, baffles ([B01L 3/502738](#) takes precedence)}
- 3/502753 {characterised by bulk separation arrangements on lab-on-a-chip devices, e.g. for filtration or centrifugation (separation in general [B01D](#); microapparatus for analysis using electrophoresis [G01N 27/44791](#); sample preparation [G01N 1/28](#))}
- 3/502761 {specially adapted for handling suspended solids or molecules independently from the bulk fluid flow, e.g. for trapping or sorting beads, for physically stretching molecules (investigating characteristics of particles [G01N 15/00](#))}
- 3/502769 {characterised by multiphase flow arrangements}
- 3/502776 {specially adapted for focusing or laminating flows}
- 3/502784 {specially adapted for droplet or plug flow, e.g. digital microfluidics (automatic analysis using a stream of discrete samples in a tube system [G01N 35/08](#))}
- 3/502792 {for moving individual droplets on a plate, e.g. by locally altering surface tension}
- 3/5029 {using swabs}
- 3/505 . . {flexible containers not provided for above}
- 3/5055 . . . {Hinged, e.g. opposable surfaces}
- 3/508 . . {rigid containers not provided for above}
- 3/5082 . . . {Test tubes *per se*}

- 3/50825 {Closing or opening means, corks, bungs (closures for containers [B65D](#); means for removing stoppers [B67B 7/02](#))}
- 3/5085 . . . {for multiple samples, e.g. microtitration plates}
- 3/50851 {specially adapted for heating or cooling samples (laboratory heating apparatus [B01L 7/00](#); incubators [C12M](#))}
- 3/50853 {with covers or lids}
- 3/50855 {using modular assemblies of strips or of individual wells}
- 3/50857 {using arrays or bundles of open capillaries for holding samples}
- 3/5088 . . . {confining liquids at a location by surface tension, e.g. virtual wells on plates, wires ([B01L 3/50857](#) takes precedence)}
- 3/52 . {Containers specially adapted for storing or dispensing a reagent ([B01L 3/02](#) takes precedence; containers for medical or pharmaceutical purposes [A61J 1/00](#); containers in general [B65D](#); storing or dispensing test elements [G01N 33/4875](#); automated reagent dispensing [G01N 35/1002](#))}
- 3/523 . . {with means for closing or opening}
- 3/527 . . {for a plurality of reagents}
- 3/54 . {Labware with identification means (identification of carriers, materials or components in automatic analysers [G01N 35/00732](#))}
- 3/545 . . {for laboratory containers}
- 3/5453 . . . {for test tubes}
- 3/5457 . . . {for container closures}
- 3/56 . {Labware specially adapted for transferring fluids}
- 3/561 . . {Tubes; Conduits (in general [F16L](#))}
- 3/563 . . {Joints or fittings (in general [F16L](#)); Separable fluid transfer means to transfer fluids between at least two containers, e.g. connectors}
- 3/5635 . . . {connecting two containers face to face, e.g. comprising a filter}
- 3/565 . . {Seals (in general [F16L](#))}
- 3/567 . . {Valves, taps or stop-cocks (in combination with burettes [B01L 3/0203](#); in general [F16K](#))}
- 3/569 . . {Glassware}
- 5/00 Gas handling apparatus** (gas jars or cylinders [B01L 3/12](#); cold traps, cold baffles [B01D 8/00](#); separation of gases or vapours [B01D 53/00](#); gas generators [B01J 7/00](#); steam traps [F16T](#))
- 5/02 . Gas collection apparatus, e.g. by bubbling under water (for sampling [G01N](#))
- 5/04 . Gas washing apparatus, e.g. by bubbling
- 7/00 Heating or cooling apparatus** (evaporators [B01D 1/00](#); drying gases or vapours, e.g. desiccators, [B01D 53/26](#); autoclaves [B01J 3/04](#); drying ovens [F26B](#); furnaces, ovens [F27](#)); **Heat insulating devices**
- 7/02 . Water baths; Sand baths; Air baths
- 7/04 . Heat insulating devices, e.g. jackets for flasks
- 7/50 . {Cryostats}
- 7/52 . {with provision for submitting samples to a predetermined sequence of different temperatures, e.g. for treating nucleic acid samples (amplification or hybridisation processes per se [C12Q 1/68](#); controlling sequential reactions for synthesis [B01J 19/0046](#))}
- 7/525 . . {with physical movement of samples between temperature zones}
- 7/5255 . . . {by moving sample containers}
- 7/54 . {using spatial temperature gradients}
- 9/00 Supporting devices; Holding devices** (tweezers, tongs [B25B](#))
- 9/02 . Laboratory benches or tables; Fittings therefor
- 9/04 . Retort stands; Retort clamps
- 9/06 . Test-tube stands; Test-tube holders
- 9/065 . . {specially adapted for capillary tubes}
- 9/50 . {Clamping means, tongs (in general [F16B 2/06](#))}
- 9/52 . {Supports for flat sample carrier, e.g. used for plates, slides, chips}
- 9/523 . . {for multisample carriers, e.g. used for microtitration plates}
- 9/527 . . {for microfluidic devices, e.g. used for lab-on-a-chip}
- 9/54 . {Supports related to pipettes and burettes}
- 9/543 . . {for disposable pipette tips, e.g. racks or cassettes}
- 9/547 . . {for dispensing pins}
- 99/00 Subject matter not provided for in other groups of this subclass** {(chemical indicators in general [G01N](#))}
- 2200/00 Solutions for specific problems relating to chemical or physical laboratory apparatus**
- 2200/02 . Adapting objects or devices to another
- 2200/021 . . Adjust spacings in an array of wells, pipettes or holders, format transfer between arrays of different size or geometry
- 2200/022 . . . Variable spacings
- 2200/023 . . adapted for different sizes of tubes, tips or container
- 2200/025 . . Align devices or objects to ensure defined positions relative to each other
- 2200/026 . . Fluid interfacing between devices or objects, e.g. connectors, inlet details
- 2200/027 . . . for microfluidic devices
- 2200/028 . . Modular arrangements
- 2200/04 . Exchange or ejection of cartridges, containers or reservoirs
- 2200/06 . Fluid handling related problems
- 2200/0605 . . Metering of fluids
- 2200/061 . . Counting droplets
- 2200/0615 . . Loss of fluid by dripping
- 2200/0621 . . Control of the sequence of chambers filled or emptied
- 2200/0626 . . using levitated droplets
- 2200/0631 . . Purification arrangements, e.g. solid phase extraction [SPE]
- 2200/0636 . . Focussing flows, e.g. to laminate flows
- 2200/0642 . . Filling fluids into wells by specific techniques
- 2200/0647 . . Handling flowable solids, e.g. microscopic beads, cells, particles
- 2200/0652 . . . Sorting or classification of particles or molecules
- 2200/0657 . . . Pipetting powder
- 2200/0663 . . . Stretching or orienting elongated molecules or particles
- 2200/0668 . . . Trapping microscopic beads
- 2200/0673 . . Handling of plugs of fluid surrounded by immiscible fluid
- 2200/0678 . . Facilitating or initiating evaporation

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| 2200/0684 | . . Venting, avoiding backpressure, avoid gas bubbles | 2300/0809 | . . rectangular shaped |
| 2200/0689 | . . Sealing | 2300/0812 | . . . Bands; Tapes |
| 2200/0694 | . . Creating chemical gradients in a fluid | 2300/0816 | . . . Cards, e.g. flat sample carriers usually with flow in two horizontal directions |
| 2200/08 | . Ergonomic or safety aspects of handling devices | 2300/0819 | . . . Microarrays; Biochips |
| 2200/082 | . . Handling hazardous material | 2300/0822 | . . . Slides |
| 2200/085 | . . Protection against injuring the user | 2300/0825 | . . . Test strips |
| 2200/087 | . . Ergonomic aspects | 2300/0829 | . . . Multi-well plates; Microtitration plates |
| 2200/10 | . Integrating sample preparation and analysis in single entity, e.g. lab-on-a-chip concept | 2300/0832 | . . cylindrical, tube shaped |
| 2200/12 | . Specific details about manufacturing devices | 2300/0835 | . . . Ampoules |
| 2200/14 | . Process control and prevention of errors | 2300/0838 | . . . Capillaries |
| 2200/141 | . . Preventing contamination, tampering | 2300/0841 | . . . Drums |
| 2200/142 | . . Preventing evaporation | 2300/0845 | . . . Filaments, strings, fibres, i.e. not hollow |
| 2200/143 | . . Quality control, feedback systems | 2300/0848 | . . Specific forms of parts of containers |
| 2200/145 | . . . Detecting door closure | 2300/0851 | . . . Bottom walls |
| 2200/146 | . . . Employing pressure sensors | 2300/0854 | . . . Double walls |
| 2200/147 | . . . Employing temperature sensors | 2300/0858 | . . . Side walls |
| 2200/148 | . . Specific details about calibrations | 2300/0861 | . . Configuration of multiple channels and/or chambers in a single devices |
| 2200/16 | . Reagents, handling or storing thereof | 2300/0864 | . . . comprising only one inlet and multiple receiving wells, e.g. for separation, splitting |
| 2200/18 | . Transport of container or devices | 2300/0867 | . . . Multiple inlets and one sample wells, e.g. mixing, dilution |
| 2200/185 | . . Long distance transport, e.g. mailing | 2300/087 | . . . Multiple sequential chambers |
| 2300/00 | Additional constructional details | 2300/0874 | . . . Three dimensional network |
| 2300/02 | . Identification, exchange or storage of information | 2300/0877 | . . . Flow chambers |
| 2300/021 | . . Identification, e.g. bar codes | 2300/088 | . . . Channel loops |
| 2300/022 | . . . Transponder chips | 2300/0883 | . . . Serpentine channels |
| 2300/023 | . . Sending and receiving of information, e.g. using bluetooth | 2300/0887 | . . Laminated structure |
| 2300/024 | . . Storing results with means integrated into the container | 2300/089 | . . Virtual walls for guiding liquids |
| 2300/025 | . . Displaying results or values with integrated means | 2300/0893 | . . having a very large number of wells, microfabricated wells |
| 2300/026 | . . . Drum counters | 2300/0896 | . . Nanoscaled |
| 2300/027 | . . . Digital display, e.g. LCD, LED | 2300/10 | . Means to control humidity and/or other gases |
| 2300/028 | . . . Graduation | 2300/105 | . . using desiccants |
| 2300/04 | . Closures and closing means | 2300/12 | . Specific details about materials |
| 2300/041 | . . Connecting closures to device or container | 2300/123 | . . Flexible; Elastomeric |
| 2300/042 | . . . Caps; Plugs | 2300/126 | . . Paper |
| 2300/043 | . . . Hinged closures | 2300/14 | . Means for pressure control |
| 2300/044 | . . . pierceable, e.g. films, membranes | 2300/16 | . Surface properties and coatings |
| 2300/045 | . . . whereby the whole cover is slidable | 2300/161 | . . Control and use of surface tension forces, e.g. hydrophobic, hydrophilic |
| 2300/046 | . . Function or devices integrated in the closure | 2300/163 | . . . Biocompatibility |
| 2300/047 | . . . Additional chamber, reservoir | 2300/165 | . . . Specific details about hydrophobic, oleophobic surfaces |
| 2300/048 | . . . enabling gas exchange, e.g. vents | 2300/166 | Suprahydrophobic; Ultraphobic; Lotus-effect |
| 2300/049 | . . . Valves integrated in closure | 2300/168 | . . Specific optical properties, e.g. reflective coatings |
| 2300/06 | . Auxiliary integrated devices, integrated components | 2300/18 | . Means for temperature control |
| 2300/0609 | . . Holders integrated in container to position an object | 2300/1805 | . . Conductive heating, heat from thermostatted solids is conducted to receptacles, e.g. heating plates, blocks |
| 2300/0618 | . . . for removable separation walls | 2300/1811 | . . . using electromagnetic induction heating |
| 2300/0627 | . . Sensor or part of a sensor is integrated | 2300/1816 | . . . using induction heating |
| 2300/0636 | . . . Integrated biosensor, microarrays | 2300/1822 | . . . using Peltier elements |
| 2300/0645 | . . . Electrodes | 2300/1827 | . . . using resistive heater |
| 2300/0654 | . . . Lenses; Optical fibres | 2300/1833 | . . using electrical currents in the sample itself |
| 2300/0663 | . . . Whole sensors | 2300/1838 | . . using fluid heat transfer medium |
| 2300/0672 | . . Integrated piercing tool | 2300/1844 | . . . using fans |
| 2300/0681 | . . Filter | 2300/185 | . . . using a liquid as fluid |
| 2300/069 | . . Absorbents; Gels to retain a fluid | 2300/1855 | . . using phase changes in a medium |
| 2300/08 | . Geometry, shape and general structure | 2300/1861 | . . using radiation |
| 2300/0803 | . . Disc shape | 2300/1866 | . . . Microwaves |
| 2300/0806 | . . . Standardised forms, e.g. compact disc [CD] format | | |

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| 2300/1872 | . . . Infrared light | 2400/0627 | . . Molecular gates forcing or inhibiting diffusion |
| 2300/1877 | . . using chemical reactions | 2400/0633 | . . with moving parts |
| 2300/1883 | . . using thermal insulation | 2400/0638 | . . . membrane valves, flap valves |
| 2300/1888 | . . Pipettes or dispensers with temperature control | 2400/0644 | . . . rotary valves |
| 2300/1894 | . . Cooling means; Cryo cooling | 2400/065 | . . . sliding valves |
| 2400/00 | Moving or stopping fluids | 2400/0655 | . . . pinch valves |
| 2400/02 | . Drop detachment mechanisms of single droplets from nozzles or pins | 2400/0661 | . . . shape memory polymer valves |
| 2400/021 | . . non contact spotting by inertia, i.e. abrupt deceleration of the nozzle or pin | 2400/0666 | . . . Solenoid valves |
| 2400/022 | . . droplet contacts the surface of the receptacle | 2400/0672 | . . . Swellable plugs |
| 2400/024 | . . . touch-off at the side wall of the receptacle | 2400/0677 | . . phase change valves; Melttable, freezing, dissolvable plugs; Destructible barriers |
| 2400/025 | . . . tapping tip on substrate | 2400/0683 | . . . mechanically breaking a wall or membrane within a channel or chamber |
| 2400/027 | . . electrostatic forces between substrate and tip | 2400/0688 | . . surface tension valves, capillary stop, capillary break |
| 2400/028 | . . Pin is moved through a ring which is filled with a fluid | 2400/0694 | . . vents used to stop and induce flow, backpressure valves |
| 2400/04 | . Moving fluids with specific forces or mechanical means | 2400/08 | . Regulating or influencing the flow resistance |
| 2400/0403 | . . specific forces | 2400/082 | . . Active control of flow resistance, e.g. flow controllers |
| 2400/0406 | . . . capillary forces | 2400/084 | . . Passive control of flow resistance |
| 2400/0409 | . . . centrifugal forces | 2400/086 | . . . using baffles or other fixed flow obstructions |
| 2400/0412 | using additionally coriolis forces | 2400/088 | . . . by specific surface properties |
| 2400/0415 | . . . electrical forces, e.g. electrokinetic | | |
| 2400/0418 | electro-osmotic flow [EOF] | | |
| 2400/0421 | electrophoretic flow | | |
| 2400/0424 | Dielectrophoretic forces | | |
| 2400/0427 | Electrowetting | | |
| 2400/043 | . . . magnetic forces | | |
| 2400/0433 | . . . vibrational forces | | |
| 2400/0436 | acoustic forces, e.g. surface acoustic waves [SAW] | | |
| 2400/0439 | ultrasonic vibrations, vibrating piezo elements | | |
| 2400/0442 | . . . thermal energy, e.g. vaporisation, bubble jet | | |
| 2400/0445 | Natural or forced convection | | |
| 2400/0448 | Marangoni flow; Thermocapillary effect | | |
| 2400/0451 | Thermophoresis; Thermodiffusion; Soret-effect | | |
| 2400/0454 | . . . radiation pressure, optical tweezers | | |
| 2400/0457 | . . . passive flow or gravitation | | |
| 2400/046 | . . . Chemical or electrochemical formation of bubbles | | |
| 2400/0463 | . . . Hydrodynamic forces, venturi nozzles | | |
| 2400/0466 | . . . Evaporation to induce underpressure | | |
| 2400/0469 | . . . Buoyancy | | |
| 2400/0472 | . . . Diffusion | | |
| 2400/0475 | . . specific mechanical means and fluid pressure | | |
| 2400/0478 | . . . pistons | | |
| 2400/0481 | . . . squeezing of channels or chambers | | |
| 2400/0484 | . . . Cantilevers | | |
| 2400/0487 | . . . fluid pressure, pneumatics | | |
| 2400/049 | vacuum | | |
| 2400/0493 | . . Specific techniques used | | |
| 2400/0496 | . . . Travelling waves, e.g. in combination with electrical or acoustic forces | | |
| 2400/06 | . Valves, specific forms thereof | | |
| 2400/0605 | . . check valves | | |
| 2400/0611 | . . . duck bill valves | | |
| 2400/0616 | . . . Ball valves | | |
| 2400/0622 | . . distribution valves, valves having multiple inlets and/or outlets, e.g. metering valves, multi-way valves | | |