

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](#))

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

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[B01F 17/02-B01F 17/56](#)

covered by

[B01F 17/00-B01F 17/0092](#)

1/00	Dissolving ({without involving chemical reactions; B01F 3/04099 takes precedence;} separating by dissolving B01D ; dissolving to effect cooling F25D 5/00)	3/00	Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed ({ C08J 3/02 takes precedence})
1/0005	• {Methods}	2003/0007	• {Maintaining the aggregation state of the mixed materials}
1/0011	• {using driven stirrers}	2003/0014	• • {Maintaining mixed ingredients in movement to prevent crystallisation of the ingredients after mixing}
1/0016	• {comprising constructions for blocking or redispersing undissolved solids, e.g. sieves, separators, guiding constructions (B01F 1/0033 takes precedence)}	2003/0021	• • {Preventing precipitation of solid ingredients during or after mixing by adding a solvent}
1/0022	• {using flow mixing}	2003/0028	• • {Preventing sedimentation, conglomeration, agglomeration of solid ingredients during or after mixing by maintaining mixed ingredients in movement}
1/0027	• • {using additional holders in conduits, containers or pools for keeping the solid material in place, e.g. supports, receptacles}	2003/0035	• • {Maintaining mixed ingredients in movement to prevent separation of the ingredients after mixing}
1/0033	• • • {comprising constructions for blocking or redispersing undissolved solids}	2003/0042	• {Specific aggregation state of one or more of the phases to be mixed}
1/0038	• {Dissolving systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means}	2003/005	• • {Mixing ingredients in more than two different agglomeration states, phases}
2001/0044	• {characterized by the state of the material being dissolved}	2003/0057	• • {Mixing cryogenic aerosols, i.e. mixtures of gas with solid particles in cryogenic condition, with other ingredients}
2001/005	• • {Molten solids (mixing the melt B01F 3/08)}	2003/0064	• • {Mixing fluids or with fluids in a supercritical state, in supercritical conditions, variable density fluids}
2001/0055	• • {characterised by the configuration, form or shape of the solid material, e.g. in the form of tablets, blocks}	2003/0071	• {Mixing phases by adding a very small quantity of one of the phases, microdosing}
2001/0061	• • • {in the form of tablets stored in containers, canisters, receptacles}	2003/0078	• • {Adding a small quantity or concentration of an additional phase in a main phase, e.g. acting as a carrier phase}
2001/0066	• • {Solid carbon dioxide or dry ice}	2003/0085	• • {Mixing ingredients in very small quantity, adding microingredients, microconcentration, e.g. adding vitamins, minerals, proteins, enzymes, hormones, antibiotics, worm medicines}
2001/0072	• {Elements used for separating or keeping undissolved material in the mixer}		
2001/0077	• • {Tablet canisters provided with perforated walls, sieves, grids or filters}		
2001/0083	• • {Baffles}		
2001/0088	• • {Filters}		
2001/0094	• • {Sieves, i.e. perforated plates or walls}		

3/0092	. {Mixing systems, i.e. flow charts or diagrams for components having more than two different of having undetermined agglomeration states, e.g. supercritical state (mixing plant B01F 13/10)}	3/04113	. . . . {Arrangement or manipulation of the gas bubbling devices}
3/02	. gases with gases or vapours {(for preparing respiratory gases or vapours A61M 16/12)}	3/0412	. . . . {Mounting the bubbling devices or the diffusers (B01F 3/04241 takes precedence)}
3/022	. . {with vaporisation of a liquid}	2003/04127	. . . . {comprising the use of flow guiding elements adjacent or above the gas stream}
3/024	. . {with moving mixing elements, e.g. with liquid seal (B01F 3/022 takes precedence)}	2003/04134	. . . . {the flow guiding elements being baffles, tubes or walls}
3/026	. . {Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means}	2003/04141	. . . . {the flow guiding elements being dome-shaped elements, i.e. for trapping air, e.g. cap-, umbrella-, inversed cone-shaped}
3/028	. . . {characterised by the construction of the controlling means}	2003/04148	. . . . {characterized by the disposition of the bubbling elements in particular configurations, patterns or arrays}
3/04	. gases or vapours with liquids (mixing non-alcoholic beverages with gases A23L 2/54 ; for medical purposes A61M 16/14)}	2003/04156	. . . . {characterized by the way in which the different elements of the bubbling installation are mounted}
3/04007	. . {Introducing a liquid into a gaseous medium, e.g. preparation of aerosols (for air-conditioning F24F 6/00)}	2003/04163	. . . . {Mounting auxiliary devices, e.g. pumps, compressors in a particular place on the bubbling installation, e.g. under water}
3/04014	. . . {Methods}	2003/0417	. . . . {Mounting the gas transporting elements, i.e. connections between conduits}
3/04021	. . . {by spraying or atomising of the liquid (apparatus for spraying or atomising per se B05B ; evaporating by spraying B01D 1/16)}	2003/04177	. . . . {Mounting the bubbling elements, diffusers, e.g. on conduits, using connecting elements; Connections therefor}
3/04028	. . . . {using rotating elements, e.g. rolls, brushes}	2003/04184	. . . . {characterized by the way in which the bubbling devices are mounted within the receptacle}
3/04035	. . . . {for spraying the liquid radially by centrifugal force}	2003/04191	. . . . {the bubbling devices being fixed, anchored in the bottom}
3/04042	. . . . {with additional rotating elements mounted on the same axis, e.g. fans, for moving the gas}	2003/04198	. . . . {the bubbling devices being supported, e.g. on cables or laying on the bottom}
3/04049	. . . . {using nozzles}	2003/04205	. . . . {the bubbling devices being suspended on a supporting construction, i.e. not on a floating construction}
3/04056	. . . . {High pressure atomization, i.e. the liquid is atomized and sprayed by a jet at high pressure}	2003/04212	. . . . {the bubbling devices being provided with ballast to keep them floating under the surface, i.e. when the bubbling devices are lighter than the liquid}
3/04063	. . . . {Internal mixer atomization, i.e. liquid and gas are mixed and atomized in a jet nozzle before spraying}	2003/04219	. . . . {the bubbling devices floating and having a pendulum movement, going to and from, moving in alternating directions}
3/0407	. . . . {using electric, sonic or ultrasonic energy}	2003/04226	. . . . {the bubbling devices floating and having a rotating movement around a central vertical axis}
3/04078	. . . {using a gas-liquid mixing column or tower (absorbing units for separating gases or vapours B01D 53/18)}	2003/04234	. . . . {Means for manipulating the bubbling constructions and/or elements, e.g. for raising or lowering them}
3/04085	. . . {by forcing the gas through absorbent pads containing the liquid}	3/04241	. . . . {Diffusers}
2003/04092	. . . {by using liquefied or cryogenic gases as liquid component}	3/04248	. . . . {having injection means, e.g. nozzles with circumferential outlet}
3/04099	. . {Introducing a gas or vapour into a liquid medium, e.g. producing aerated liquids (methods for the preparation of non-alcoholic beverages, e.g. of carbonated water A23L 2/00 ; bottling liquids, e.g. combined with aerating or carbonating B67C 3/00 ; dispensing beverages on draught combined with carbonating B67D 1/0057 , B67D 1/025 , B67D 1/0406 , B67D 1/0418 ; dispensing beverages by gas pressure from storage containers, e.g. syphons B67D 1/04 ; biological treatment of water, waste water or sewage C02F 3/00 ; impregnating wine with carbon dioxide C12G 1/06 ; gas introduction means for enzymology or microbiology apparatus C12M 1/04)}	3/04255	. . . . {having elements opening under air pressure, e.g. valves}
3/04106	. . . {the gas being introduced by bubbling, e.g. within receptacles or tanks (B01F 3/04531 , B01F 3/04787 take precedence; introducing gas for agitation only B01F 13/02)}	3/04262	. . . . {consisting of rigid porous or perforated material}

3/04269	{consisting of flexible porous or perforated material, e.g. fabric}	3/04468	{by moving liquid and gas in counter current (absorbing units for separating gases or vapours B01D 53/18 ; in heat exchange apparatus F28C 3/06)}
2003/04276	{characterized by the way in which they are assembled or mounted; Fabricating the parts of the diffusers}	3/04475	{the liquid flowing in a thin film to absorb the gas (fractional distillation with fractionating columns in which vapour bubbles through liquid B01D 3/16)}
2003/04283	{characterized by the shape of the diffuser element}	3/04482	{the liquid film or layer flowing over a horizontal or inclined surface, e.g. perforated}
2003/0429	{having a box- or bloc-shape, being in the form of aeration stones}	3/04489	{the liquid film or layer flowing over a vertical surface, e.g. a mesh}
2003/04297	{having disc shape}	3/04496	{using columns, e.g. multistaged columns}
2003/04304	{having dome-, cap-, inversed cone-shape}	3/04503	{by circulating the flow in guiding constructions or conduits}
2003/04312	{being in the form of plates, flat beams, flat membranes or films}	3/0451	{being at least partially immersed in the liquid, e.g. in a closed circuit (B01F 3/04602 takes precedence)}
2003/04319	{being tubes, tubular elements, cylindrical elements, set of tubes}	3/04517	{The conduits being vertical draft pipes with a lower intake end and an upper exit end}
2003/04326	{being in the form of rings or annular elements}	3/04524	{the guiding constructions being baffles for guiding the flow up-and-down or from left-to-right}
2003/04333	{being axially stacked discs, rings, plates}	3/04531	{using driven stirrers with completely immersed stirring elements (B01F 3/04453 takes precedence; surface aerating with stirrers near to the surface B01F 3/04765 ; flotation machines B03D 1/16)}
2003/0434	{being helically wound, coiled and joined bands, wires}	3/04539	{characterised by the introduction of the gas along the axis of the stirrer or along the stirrer elements}
2003/04347	{being spirally wound, coiled tubes or spirally wound, coiled and joined bands, wires}	2003/04546	{through a hollow stirrer axis}
2003/04354	{characterized by the nature of the diffuser gas outlet}	2003/04553	{through a conduit surrounding the stirrer axis}
2003/04361	{Perforations}	2003/0456	{through a separate conduit substantially parallel with the stirrer axis}
2003/04368	{Slits, cut-out openings}	2003/04567	{through a hollow stirrer element}
2003/04375	{Screens, nets, grades, grids}	2003/04574	{through a hollow guide surrounding the stirrer element}
2003/04382	{Fabric in the form of woven, knitted, braided, non-woven or flocculated fibers or filaments}	2003/04581	{through a separate hollow guide substantially parallel with the stirrer element}
2003/0439	{Pores}	3/04588	{the stirrer rotating about a horizontal axis; Stirrers therefor}
2003/04397	{Foam-like}	3/04595	{Single stirrer-drive aerating units, e.g. with the stirrer-head pivoting around an horizontal axis}
2003/04404	{Dissolving, hollow fiber membranes}	3/04602	{provided with stationary guiding means surrounding at least partially the stirrer}
2003/04411	{having specific properties or elements attached thereto}	3/04609	{with tubes surrounding the stirrer}
2003/04418	{Made of or comprising a biocide}	3/04617	{the stirrer being of the centrifugal type, e.g. with a surrounding stator}
2003/04425	{Made of or comprising a material able to store a gas which is released when water flows through it}	2003/04624	{characterised by the direction of introduction of the gas relative to the stirrer}
2003/04432	{Having elements to protect the parts of the diffusers, e.g. from clogging when not in use}	2003/04631	{the gas moving along the axis of rotation}
3/04439	{Methods}	2003/04638	{the gas moving perpendicular to the axis of rotation}
3/04446	{Making foam (for cocoa products A23G 1/105 ; for sweet meats A23G 3/0221 ; for fire-extinguishing foam A62C 5/02 ; spray pistols for making foam B05B 7/0018 ; foam used in forming crevices or fractures for stimulation of oil production E21B 43/26)}	2003/04645	{the gas being sucked towards the rotating stirrer}
3/04453	{using driven stirrers}	2003/04652	{the gas being driven away from the rotating stirrer}
3/0446	{using flow mixing means for introducing the gas, e.g. in conduits or in vessels (B01F 3/04106 , B01F 3/0876 take precedence; distillation in which liquids are contacted with gaseous media B01D 3/00 ; jet regulation with aerating means for fresh water plumbing installations E03C 1/084)}		

- 2003/04659 {characterised by the location of the place of introduction of the gas relative to the stirrer}
- 2003/04666 {the gas being introduced in a guide tube surrounding at least partially the axis of the stirrer}
- 2003/04673 {the gas being introduced under the stirrer}
- 2003/0468 {the gas being introduced above the stirrer}
- 2003/04687 {the gas being introduced between the stirrer elements}
- 2003/04695 {at the stirrer axis}
- 2003/04702 {at the stirrer elements}
- 2003/04709 {the gas being introduced at the radial periphery of the stirrer}
- 2003/04716 {the gas being introduced in front of the stirrer}
- 2003/04723 {the gas being introduced behind the stirrer}
- 3/0473 . . . {Surface aerating, e.g. by cascading, spraying or projecting a liquid into a gaseous atmosphere (direct-contact heat exchange apparatus, the heat-exchange media being a liquid and a gas or a vapour [F28C 3/06](#))}
- 3/04737 . . . {by cascading, spraying or projecting a liquid into a gaseous atmosphere ([B01F 3/04765](#) takes precedence)}
- 3/04744 {Surface aerating by cascading the liquid}
- 3/04751 {Surface aerating using liquid falling from orifices in a gaseous atmosphere, the orifices being exits from perforations, tubes, chimneys}
- 3/04758 {Surface aerating using nozzles for projecting the liquid as a jet}
- 3/04765 {with stirrers near to the liquid surface, e.g. partially immersed, for spraying the liquid in the gas or for sucking gas into the liquid, e.g. using stirrers rotating around a horizontal axis or using centrifugal force}
- 3/04773 {the stirrers rotating about a vertical axis}
- 3/0478 {Stirrers therefor}
- 3/04787 . . . {Apparatus for aerating or carbonating beverages ([B01F 3/0446](#), [B01F 3/04978](#) take precedence; using effervescence-generating compositions, e.g. carbon dioxide tablets [A23L 2/40](#))}
- 3/04794 {for aerating or carbonating beverages within containers, e.g. bottles}
- 3/04801 {Portable appliances comprising a gas cartridge}
- 3/04808 {for aerating or carbonating within receptacles or tanks, e.g. distribution machines ([B01F 3/04794](#) takes precedence)}
- 3/04815 {Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means}
- 2003/04822 {Using security elements, e.g. valves, for relieving overpressure}
- 3/04829 . . . {Parts; Accessories}
- 3/04836 {Mixing receptacles, e.g. tanks, vessels, reactors, being completely closed, e.g. hermetically closed}
- 2003/04843 . . . {characterized by the gas being introduced or the material in which the gas is introduced}
- 2003/04851 {characterized by the gas being introduced}
- 2003/04858 {in the form of microbubbles, e.g. to obtain aphrons}
- 2003/04865 {Aerating, i.e. introducing oxygen containing gas in liquids}
- 2003/04872 {Normal air}
- 2003/04879 {Oxygen}
- 2003/04886 {Ozone}
- 2003/04893 {Carbonating liquids}
- 2003/049 {Beverages}
- 2003/04907 {Chlorine or chlorine containing gases}
- 2003/04914 {Hydrogenating liquids}
- 2003/04921 {Nitrogenating liquids}
- 2003/04929 {Sulphurating liquids, e.g. introducing sulphur dioxide}
- 2003/04936 {Introducing steam, damp in liquids}
- 2003/04943 {characterized by the material in which the gas is introduced}
- 2003/0495 {Dispersion or a suspension}
- 2003/04957 {Emulsion}
- 2003/04964 {Melt, i.e. in a molten, heated solid}
- 2003/04971 {Slurry}
- 3/04978 . . . {using vibrations, electrical or magnetical energy, radiations}
- 3/04985 . . . {Mixing systems, i.e. flow charts or diagrams}
- 3/04992 . . . {for obtaining foams or aerosols}
- 3/06 . . . gases or vapours with solids
- 2003/061 . . . {by introducing solids in gas volumes}
- 2003/063 . . . {by introducing gases in solid materials, e.g. in masses of powder or particles}
- 2003/065 . . . {by introducing steam, e.g. for wetting the solids}
- 2003/066 . . . {by mixing in fluidised bed state}
- 3/068 . . . {Mixing systems, i.e. flow charts or diagrams}
- 3/08 . . . liquids with liquids; Emulsifying ([B01F 13/0222](#) takes precedence; dispensing beverages on draught combined with mixing [B67D 1/0015](#), [B67D 1/0043](#))}
- 3/0803 . . . {Methods ([B01F 3/0811](#) takes precedence)}
- 3/0807 . . . {Emulsifying (homogenising milk [A01J 11/16](#); for adding a water-fuel emulsion in engine-pertinent apparatus [F02M 25/0228](#); for preparing emulsion of liquid fuel with other fluid(s) for feeding combustion apparatus [F23K 5/12](#))}
- 3/0811 . . . {Methods}
- 3/0815 . . . {using heat, vibrations, electrical or magnetical energy}
- 3/0819 {using vibrations}
- 2003/0823 . . . {characterized by the internal structure of the emulsion}
- 2003/0826 {High internal phase ratio [HIPR] emulsions, e.g. having high percentage of internal phase, e.g. higher than 60-90 % of water in oil [W/O]}
- 2003/083 {Inversed-type emulsions}
- 2003/0834 {Microemulsions}
- 2003/0838 {Multiple emulsions, in particular double emulsion, e.g. water in oil in water; Three-phase emulsion}
- 2003/0842 {Emulsions of oils, e.g. fuel, and water}

2003/0846	. . . . {Emulsions including solid particles, e.g. as solution or dispersion, i.e. molten material or material dissolved in a solvent or dispersed in a liquid}	3/186	. . {by evaporating or liquefying at least one of the components; using a fluid which is evaporated after mixing}
2003/0849	. . . {Homogenizing a raw emulsion, making monodisperse or fine emulsions}	3/188	. . {Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means}
3/0853	. . {Mixing liquids using driven stirrers}	3/20	. Pretreatment of the materials to be mixed {(B28C 5/404, B29B 7/905 take precedence)}
3/0857	. . . {At least one of the liquids being introduced from the outside through or along the axis of a rotating stirrer, e.g. the stirrer being rotating due to the reaction of the introduced liquid}	3/2007	. . {Coating solid components}
3/0861	. . {Mixing liquids using flow mixing}	3/2014	. . {Cooling components}
3/0865	. . . {by injecting or introducing one liquid into another}	3/2021	. . {Degassing, deaerating components; replacing one gas within the components by another gas}
3/0869	. . . {by uniting flows taken from different parts of a receptacle or silo; Sandglass-type mixing (for particulate material B01F 5/24)}	3/2028	. . {Drying components, e.g. in order to mix them in solid state}
3/0873	. . . {by moving the liquids in countercurrent}	3/2035	. . {Submitting components to electrical energy fields to charge or ionize them}
3/0876	. . . {by injecting a mixture of liquid and gas}	3/2042	. . {Evaporating solvents, dispersion liquid, e.g. water, at least partially}
3/088	. . {Mixing systems, i.e. flow charts or diagrams}	3/205	. . {Extracting components to be mixed from a stream of fluid or from a solid containing them, e.g. by adsorption, absorption or distillation}
2003/0884	. . {characterised by the nature of the liquids}	3/2057	. . {Filtering components}
2003/0888	. . . {using liquefied or cryogenic gases}	3/2064	. . {Freezing components, e.g. to mix them in solid state}
2003/0892	. . . {using molten solids}	3/2071	. . {Grinding components}
2003/0896	. . . {Using water for diluting a liquid ingredient, obtaining a predetermined concentration or making an aqueous solution of a concentrate}	3/2078	. . {Heating components, e.g. melting}
3/10	. . Mixing very viscous liquids	3/2085	. . {Irradiating components}
2003/105	. . . {using a very viscous liquid and a liquid of low viscosity}	3/2092	. . {Sieving components}
3/12	. liquids with solids ({B01F 1/00 takes precedence;} displacing one liquid by another in dispersions of solids in liquids B01D 12/00)	3/22	. . Aftertreatment of the mixture
3/1207	. . {Methods (B01F 3/1221 takes precedence; process features in the making of dispersions of dyestuffs preparations C09B 67/0091)}	3/2207	. . {Coating the solid mixture}
3/1214	. . . {characterised by the composition of the liquids or solids}	3/2215	. . {Cooling the mixture}
3/1221	. . {using driven stirrers}	3/2223	. . {Venting, degassing, ventilating of gases, fumes or toxic vapours from the mixture}
3/1228	. . {Wetting solids (B01F 5/18 takes precedence)}	3/223	. . {Drying the mixture}
3/1235	. . {the mixture being submitted to electrical, sonic or similar energy}	3/2238	. . {Submitting a mixture to electrical energy fields, e.g. corona discharge}
3/1242	. . . {using vibrations}	3/2246	. . {Evaporating a carrier, e.g. liquid carbon dioxide, e.g. used to dissolve, disperse, emulsify, other components which are difficult to be mixed; Evaporating liquid components}
2003/125	. . {by introducing, e.g. dispersing, dissolving, solids in liquids}	3/2253	. . {Extracting components from the mixture, e.g. by adsorption, absorption, distillation}
2003/1257	. . {by introducing liquids in solid material, e.g. to obtain slurries}	3/2261	. . {Filtering the mixture}
2003/1264	. . . {by introducing liquids in a fluidised bed}	3/2269	. . {Freezing the mixture}
3/1271	. . {Mixing systems, i.e. flow charts or diagrams}	3/2276	. . {Grinding the mixture}
2003/1278	. . {characterized by the nature of the liquid}	3/2284	. . {Heating the mixture}
2003/1285	. . . {Mixing liquids with solids, slurries, sludge, for obtaining a diluted slurry}	3/2292	. . {Irradiating the mixture}
2003/1292	. . . {Mixing foam with solids}		
3/14	. . Mixing very viscous liquids with solids		
3/18	. solid with solids {(B01F 5/24 takes precedence; bulk material piled in a stack and unloaded from the stack to obtain an average product B65G 69/10)}		
3/182	. . {using a receptacle provided at its bottom discharge opening with oscillating or vibrating opening and closing elements, or with elements fitted on moving chains}		
3/184	. . {using rotatable mixing elements at the lower end of discharge hoppers}		

Mixers

5/00

Flow mixers (sprayers, atomisers B05B); Mixers for falling materials, e.g. solid particles (B01F 13/04 takes precedence; centrifugal mixers B04)

2005/0002	. {Direction of flow or arrangement of feed and discharge openings}
2005/0005	. . {Axial flow}
2005/0008	. . {Radial flow}
2005/0011	. . . {from the center to the circumference, i.e. centrifugal flow}
2005/0014	. . . {from the circumference to the center}
2005/0017	. . {Vortex flow, i.e. flow spiraling in a tangential direction and moving in an axial direction}

- 2005/002 . . {Tangential flow, i.e. flow spiraling in a tangential direction in a flat plane or beltlike area}
- 2005/0022 . . {Reverse flow, i.e. flow changing substantially 180° in direction}
- 2005/0025 . . {Turbulent flow, i.e. every point of the flow moves in random direction and intermixes}
- 2005/0028 . . {Laminar or parallel flow, i.e. every point of the flow moves in layers which do not intermix}
- 2005/0031 . . . {Parallel flow, i.e. every point of the flow moves in parallel layers where intermixing can occur by diffusion or which do not intermix; Focusing, i.e. compressing parallel layers without intermixing them}
- 2005/0034 . . {Counter current flow, i.e. flows moving in opposite direction and colliding}
- 2005/0037 . . {Characterised by the disposition of the feed and discharge openings}
- 2005/004 . . . {Characterised by the arrangement of the feed openings for one or more flows, e.g. for the mainflow and the flow of an additional component}
- 2005/0042 {with feed openings in the center of the main flow}
- 2005/0045 {with feed openings at the circumference of the main flow}
- 2005/0048 {with feed openings around the complete circumference of the main flow, e.g. being a perforated or porous part}
- 2005/0051 {with feed openings in the center and at the circumference of the main flow}
- 2005/0054 {with feed openings facing each other, e.g. for creating counter flows, for creating a series of vortex flows}
- 5/0057 . {Mixing by creating a vortex flow, e.g. by tangentially introducing jets ([apparatus using free vortex flow in general B04C](#))}
- 5/006 . . {wherein the vortex flows in a spherical shaped receptacle or chamber}
- 5/0062 . . {wherein the vortex is created by two or more jets introduced tangentially in separate mixing chambers or consecutively in the same mixing chamber}
- 5/0065 . . {with additional mixing means other than vortex mixers, e.g. the vortex chamber being positioned in another mixing chamber}
- 5/0068 . . {Characterised by the arrangement of the discharge opening}
- 5/0071 . . . {the mixing chamber being vertical with the outlet tube at its upper side}
- 5/0074 . . . {the mixing chamber being vertical and having an outlet tube at its bottom whose inlet is at a higher level than the inlet of the vortex creating jet, e.g. the jet being introduced at the bottom of the mixing chamber}
- 5/0077 . {Mixing heads, i.e. compact mixing units or modules, using mixing valves for feeding and mixing at least two components ([for homogenizing mixtures B01F 5/0661, mixing valves F16K 11/00](#))}
- 5/008 . . {of the mixing valve type}
- 5/0082 . {Interdigital mixers, i.e. the substances to be mixed are divided in substreams which are rearranged in an interdigital or interspersed manner ([B01F 13/0066 takes precedence](#))}
- 5/0085 . {Mixing drops, droplets, bodies of liquid which flow together or contact each other ([B01F 13/0069 takes precedence](#))}
- 2005/0088 . {Arrangement, nature or configuration of flow guiding elements}
- 2005/0091 . . {Flow guiding elements surrounding feed openings, e.g. jet nozzles}
- 2005/0094 . . {Nature of the flow guiding elements}
- 2005/0097 . . . {Surface characteristics, e.g. coated, rough}
- 5/02 . Jet mixers {([B01F 5/0057 take precedence; with gas agitation, i.e. for fluidisation B01F 13/02](#))}
- 5/0206 . . {comprising submerged injectors, e.g. nozzles, for injecting high pressure jets in a large volume or in a mixing chamber ([B01F 3/04106 takes precedence; injecting an additional component in a conduit B01F 5/0403](#))}
- 5/0212 . . . {the injectors being surrounded by guiding tubes}
- 5/0218 . . . {the injectors being movable, e.g. rotating}
- 5/0225 {Pivoting, oscillating in a multidirectional way during jetting}
- 5/0231 {Rotating during jetting}
- 5/0237 {being vertically moved to bring the injector in or out of operative position}
- 5/0243 {being moved or transported between different locations during jetting}
- 5/025 {Moving to adjust the direction of jetting, the injectors being fixed during operation}
- 5/0256 . . {Mixing by intersecting jets ([in a stream-impingement mixing head for polymers B29B 7/76](#))}
- 5/0262 . . . {the intersecting jets having the configuration of sheets, cylinders or cones}
- 5/0268 . . {Mixing by jets impinging against a collision plate}
- 5/0275 . . {Mixing by jetting a component in a conduit for agitating its contents, i.e. using high pressure jets ([injection under low pressure B01F 5/04; eductor type injector B01F 5/0413](#))}
- 5/0281 . . {characterized by the specific design of the jet injector}
- 5/0287 . . . {the jet injector being of the RESS (explosive rapid expansion of supercritical solutions) or FIMS (fluid injection of molecular spray) type, i.e. the liquid is jetted in an environment (gas or liquid) by nozzles, in conditions of significant pressure drop, with the possible generation of shock waves}
- 5/0293 . . . {the jet injector being of coanda type, i.e. having a surface to attract the jet for adjusting its direction}
- 5/04 . Injector mixers {, i.e. one or more components being added to a flowing main component ([B01F 5/0057 takes precedence](#))}
- 5/0401 . . {the additional component being axially fed and radially discharged through a circumferential outlet}
- 5/0403 . . {Mixing conduits or tubes, i.e. conduits or tubes through which the main component is flown ([mixing devices for gas burners F23D 14/62](#))}
- 5/0405 . . . {for mixing more than two components; Devices specially adapted for generating foam, e.g. air foam}
- 5/0406 {Devices specially adapted for generating foam}

5/0408	. . . . .	{with additional mixing means other than injector mixers, e.g. screen, baffles (B01F 5/041 takes precedence)}	5/0465	. . . . .	{Porous injectors}
5/041	. . . . .	{with rotating elements, e.g. driven by one of the components for feeding or by the resulting mixture for additional mixing}	5/0466	. . . . .	{Ring, torus, toroidal or coiled configurations}
5/0411	. . . . .	{with means for introducing an additional component, e.g. in predetermined proportion, in the main component}	5/0468	. . . . .	{Rotatable injectors}
5/0413	. . . . .	{provided with a venturi element}	5/047	. . . . .	{the opening for introducing the supplementary stream being a slit}
5/0415	. . . . .	{with additional mixing means other than injector mixers, e.g. screens, baffles or rotating elements}	5/0471	. . . . .	{the additional component being introduced at the circumference of the conduit}
5/0416	. . . . .	{the material flowing at a supersonic velocity thereby creating shock waves}	5/0473	. . . . .	{with additional mixing means other than injector mixers}
5/0418	. . . . .	{with two or more venturi elements}	5/0475	. . . . .	{the conduit having a plurality of openings in the axial direction or in the circumferential direction}
5/042	. . . . .	{used alternatively}	5/0476	. . . . .	{the conduit being porous}
5/0421	. . . . .	{used simultaneously}	5/0478	. . . . .	{with a plurality of perforations in the axial direction only}
5/0423	. . . . .	{used successively}	5/048	. . . . .	{with a plurality of perforations in the circumferential direction only and covering the whole circumference}
5/0425	. . . . .	{characterized by the place of introduction of the main flow}	5/0481	. . . . .	{the perforations being a complete cut-out in the circumferential direction covering the whole diameter of the tube, i.e. having two consecutive tubes placed consecutively, the additional component being introduced between them}
5/0426	. . . . .	{the main flow being injected in the circumferential area of the venturi, creating an aspiration in the central part of the conduit}	5/0483	. . . . .	{with a plurality of perforations aligned in a row perpendicular to the flow direction}
5/0428	. . . . .	{the main flow being injected in the central area of the venturi, creating an aspiration in the circumferential part of the conduit (B01F 5/043 takes precedence)}	5/0485	. . . . .	{with a plurality of perforations in the axial and circumferential direction covering the whole surface}
5/043	. . . . .	{Eductor or eductor type venturi, i.e. the main flow being injected through the venturi with high speed in the form of a jet}	5/0486	. . . . .	{characterized by the specific design of the injector}
2005/0431	. . . . .	{characteristics of the Venturi parts}	5/0488	. . . . .	{A slit extending in the longitudinal direction only}
2005/0433	. . . . .	{Core}	5/049	. . . . .	{A slit extending in the circumferential direction only}
2005/0435	. . . . .	{Adjustable Venturi core in the nozzle}	5/0491	. . . . .	{Rotatable, e.g. placed on a rotatable housing or conduit}
2005/0436	. . . . .	{Profiled, grooved, ribbed core, or being provided with baffles}	5/0493	. . . . .	{A bundle of similar tubes, each of them having feedings on the circumferential wall, e.g. as mixer for a reactor}
2005/0438	. . . . .	{Nozzle}	5/0495	. . . . .	{a difference of pressure at different points of the conduit provoking introduction of the additional component into the main component (B01F 5/0496 takes precedence)}
2005/044	. . . . .	{Adjustable Venturi nozzle}	5/0496	. . . . .	{having a container for the additional component fixed to the conduit}
2005/0441	. . . . .	{Profiled, grooved, ribbed nozzle, or being provided with baffles}	5/0498	. . . . .	{the additional component being added in a by-pass of the main flow (B01F 5/0496 , B01F 5/106 take precedence)}
2005/0443	. . . . .	{Discharge}	5/06	. . . . .	Mixers in which the components are pressed together through slits, orifices, or screens; {Static mixers; Mixers of the fractal type} (B01F 7/164 , B01F 7/225 take precedence); turbo-mixers B01F 5/16 ; colloid-mills B02C ; mixing valves F16K 11/00
2005/0445	. . . . .	{Adjustable discharge conduit or barrel, e.g. adjustable in width}	5/0601	. . . . .	{Fractal mixers}
2005/0446	. . . . .	{Profiled, grooved, ribbed discharge conduit, or being provided with baffles}	5/0602	. . . . .	{Static mixers, i.e. mixers in which the mixing is effected by moving the components jointly in changing directions, e.g. in tubes provided with baffles or obstructions (B01F 5/0661 , B01F 5/0682 take precedence)}
2005/0448	. . . . .	{Constructional characteristics of the diverging discharge conduit or barrel, e.g. with zones of changing conicity}	5/0603	. . . . .	{the mixture or the components moving in an irregular path, e.g. radially (B01F 5/0646 takes precedence)}
5/045	. . . . .	{the additional component being introduced in the centre of the conduit}			
5/0451	. . . . .	{with additional mixing means other than injector mixers, e.g. screens, baffles or rotating elements}			
5/0453	. . . . .	{by using two or more injector devices}			
5/0455	. . . . .	{used alternatively}			
5/0456	. . . . .	{used simultaneously}			
5/0458	. . . . .	{used successively}			
5/046	. . . . .	{arranged concentrically}			
5/0461	. . . . .	{characterized by the specific design of the injector}			
5/0463	. . . . .	{Perforated, multi-opening, with a plurality of holes}			

5/0604	. . . .	{the mixer being composed of stacked plates between which the material is moving, e.g. the plates being provided with grooves or orifices}	2005/0636	. . . . .	{Mounted on the wall}
5/0605	. . . .	{by means of elements placed in the receptacle for moving or guiding the components}	2005/0637	. . . . .	{Mounted on an axial support member, e.g. a rod or bar}
5/0606	. . . . .	{using baffles}	2005/0638	. . . . .	{Mounted on a support member extending transversally through the mixing tube}
5/0607	. . . . .	{using dams}	2005/0639	. . . . .	{Support members, e.g. tubular collars, with projecting baffles fitted inside the mixing tube or adjacent to the inner wall}
5/0608	. . . . .	{using plates with holes, the holes being displaced from one plate to the next one to force the flow to make a bending movement}	5/064	. . . . .	{with means for dividing a flow of material into separate subflows and for repositioning and recombining these subflows; Cross-mixing, e.g. conducting the outer layer of the material nearer to the axis of the tube or vice versa (B01F 5/0496 takes precedence ; using baffles B01F 5/061 , for falling particle mixers B01F 5/246)}
5/0609	. . .	{Mixing tubes, e.g. the material being submitted to a substantially radial movement or to a movement partially in reverse direction}	5/0641	. . . . .	{the subflows consisting of at least two flat layers which are recombined, e.g. using means having restriction or expansion zones}
5/061	. . . .	{Straight mixing tubes, e.g. with smooth walls, having baffles or obstructions therein without substantial pressure drop; Baffles therefor (for falling-particle mixers B01F 5/246)}	5/0642	. . . . .	{using a simple by-pass for separating and recombining the flow, e.g. by using branches of different length}
5/0611	. . . . .	{the baffles being adjustable}	5/0643	. . . . .	{essentially composed of stacks of sheets, e.g. corrugated sheets}
5/0612	. . . . .	{having different kinds of baffles, e.g. plates alternating with screens}	5/0644	. . . . .	{using elements provided with a plurality of channels or using a plurality of tubes which can either be placed between common spaces or collectors}
5/0613	. . . . .	{comprising a plurality of stacked ducts having their axes parallel to the tube axis}	5/0645	. . . . .	{the channels or tubes crossing each other several times}
5/0614	. . . . .	{the baffles being helical elements}	5/0646	. . . . .	{Mixers composed of several consecutive mixing tubes; Mixing tubes being deformed or bent, e.g. having varying cross-section or being provided with inwardly extending profiles, e.g. with internal screw-thread profile (B01F 5/0656 takes precedence)}
5/0615	. . . . .	{composed of consecutive sections of helical formed elements}	5/0647	. . . . .	{Mixers with bended, curved, coiled, wounded mixing tubes or comprising elements for bending the flow}
5/0616	. . . . .	{the baffles being made by deforming flat pieces of material, e.g. by bonding, folding, deep drawing (B01F 5/0614 takes precedence)}	5/0648	. . . . .	{Mixers with a strong change of direction in the conduit for homogenizing the flow}
5/0617	. . . . .	{composed of consecutive sections of deformed flat pieces of material}	5/065	. . . . .	{Mixers with scallop-shaped tubes or surfaces facing each other}
5/0618	. . . . .	{the baffles being flat pieces of material, e.g. intermeshing, fixed to the wall, fixed on a central rod}	5/0651	. . . . .	{Mixers with a converging cross-section}
5/0619	. . . . .	{composed of consecutive sections of flat pieces of material}	5/0652	. . . . .	{Mixers with a converging-diverging cross-section}
2005/062	. . . . .	{characterised by the configuration of the baffles or obstructions}	5/0653	. . . . .	{Mixers with a diverging cross-section}
2005/0621	. . . . .	{Profiled elements, e.g. profiled blades, bars, pillars, columns or chevrons}	5/0654	. . . . .	{Mixers with a diverging-converging cross-section}
2005/0622	. . . . .	{Profiled blades, wings, wedges, i.e. plate-like element having one side or part thicker than the other}	5/0655	. . . . .	{Mixers with a succession of converging-diverging cross-sections, i.e. undulating cross-section}
2005/0623	. . . . .	{Profiles, pillars, chevrons, i.e. long elements having a polygonal cross-section}	5/0656	. . . . .	{Mixing tubes having therein a cylindrical or conical insert provided with grooves, e.g. the tube being provided with inwardly extending profiles or grooves (B01F 5/0665 takes precedence)}
2005/0625	. . . . .	{Substantially flat elements, e.g. flat plates or blades}	5/0657	. . . . .	{the insert being provided with helical grooves}
2005/0626	. . . . .	{Assembled flat elements}	5/0658	. . . . .	{the insert being provided with a labyrinth of grooves or a distribution of protrusions}
2005/0627	. . . . .	{in the form of small flat plate-like elements}			
2005/0628	. . . . .	{Folded or bent blades or strips}			
2005/0629	. . . . .	{Helically bent blades or strips}			
2005/063	. . . . .	{Ring-shaped blades or strips}			
2005/0631	. . . . .	{Tubular elements}			
2005/0632	. . . . .	{Wires or coils}			
2005/0633	. . . . .	{Spirally-shaped baffle}			
2005/0634	. . . . .	{Conical or pyramidal elements}			
2005/0635	. . . . .	{characterised by the mounting of the baffles or obstructions}			

- 5/0659 {Mixing tubes composed of concentric tubular members ([pressing the components through tubular members provided with orifices B01F 5/0682](#))}
- 5/066 . . {with movable slits formed between reciprocating surfaces ([with movable slits formed between stator-rotor or two rotor systems B01F 7/0075, B01F 7/0085, B01F 7/1625](#))}
- 5/0661 . . {Mixers in which the components are pressed through slits while introducing shear, e.g. the slits being formed by balls and their seats, by the spiro of helical springs ([B01F 7/0075 takes precedence](#))}
- 5/0662 . . . {characterized by the configuration of the surfaces forming the slits}
- 5/0663 {the slits being formed between opposed planar surfaces, e.g. pushed against each other by springs}
- 5/0664 {with a plurality of parallel slits, e.g. formed between stacked plates}
- 5/0665 {the slits being formed between opposed conical or cylindrical surfaces}
- 5/0666 {the slits being formed between the balls and the seats of a bearing-like construction}
- 5/0667 {the slits being formed between the helical windings of a spring-like construction or by deforming a spring}
- 5/0668 {the opposed surfaces being provided with grooves}
- 5/0669 {Axial grooves formed on opposed surfaces, e.g. on cylinders or cones}
- 5/067 {Circumferential grooves formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones}
- 5/0671 {Helical grooves formed on opposed surfaces, e.g. on cylinders or cones}
- 5/0672 {Crossing sets of grooves forming a labyrinth formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones}
- 5/0673 {Radial grooves formed on opposed surfaces, e.g. on planar surfaces}
- 5/0675 {Spiral grooves formed on opposed surfaces, e.g. on planar surfaces}
- 5/0676 {the grooves being formed on the outer surface of the cylindrical or conical core of the slits}
- 5/0677 {the grooves being formed on the inner surface of the cylindrical or conical housing of the slits}
- 5/0678 . . . {characterized by the relative position of the surfaces during operation}
- 5/0679 {the surfaces being maintained in a fixed position, spaced from each other, therefore maintaining the slit always open}
- 5/068 {the surfaces being maintained in a fixed but adjustable position, spaced from each other, therefore allowing the slit spacing to be varied ([B01F 5/0681 takes precedence](#))}
- 5/0681 {the surfaces being part of a valve construction, formed by opposed members in contact, e.g. automatic positioning caused by spring pressure}
- 5/0682 . . {Mixers in which the components are pressed together through screens, plates provided with orifices, foam-like inserts, or through a bed of loose bodies, e.g. beads ([B01F 7/0075 takes precedence](#))}
- 5/0683 . . . {characterised by the means for moving the components or the mixture, e.g. using a piston or having one or more rotor plates, e.g. driven by the components, on the same shaft provided with orifices and co-operating with stator plates provided with orifices}
- 5/0684 {with a rotor surrounded by a stator provided with orifices}
- 5/0685 {with reciprocating pistons}
- 5/0687 . . . {characterized by the elements through which the components are pressed together}
- 5/0688 {the components being pressed through orifices in elements, e.g. flat plates or cylinders, which obstruct the whole diameter of the tube}
- 5/0689 {the elements being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- 5/069 {the elements comprising means for adjusting the orifices}
- 5/0691 {the components being pressed through porous bodies, e.g. flat plates, blocks or cylinders, which obstruct the whole diameter of the tube ([B01F 5/0698 takes precedence](#))}
- 5/0692 {the porous bodies being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- 5/0693 {the components being pressed through sieves, screens or meshes which obstruct the whole diameter of the tube}
- 5/0694 {the sieves, screens or meshes being cylinders or cones which obstruct the whole diameter of the tube, the flow changing from axial in radial and again in axial}
- 5/0695 {the components being pressed through foam-like inserts or through a bed of loose bodies, e.g. balls}
- 5/0696 {through a bed of balls}
- 5/0697 {through a bed of fibres, steel wool or wood chips}
- 5/0698 {through a foam or expanded material body}
- 5/08 . . Homogenising or emulsifying nozzles ([B01F 11/0208 takes precedence; mixing heads without moving stirrer for plastics B29B 7/7457](#))}
- 5/10 . Circulation mixers {, e.g. at least part of the mixture being discharged from, and reintroduced into, a receptacle, e.g. with rotary stirrer ([B01F 5/02 takes precedence](#))}
- 5/102 . . {the mixture being circulated during mixing through a set of tubes, e.g. involving gradually introducing a component into a circulating flow}
- 5/104 . . {provided with rotary stirrer}
- 5/106 . . {the mixture being discharged from and reintroduced into a receptacle through a recirculation tube into which an additional component is introduced}

- 5/108 . . {provided with an internal pump to recirculate the material inside the receptacle}
- 5/12 . Pump mixers {, i.e. the mixing taking place in the pump itself}
- 5/14 . . of the gear type
- 5/145 . . . {using a Wankel pump}
- 5/16 . . Turbo-mixers {, i.e. of the centrifugal-pump type}
- 5/162 . . . {Multi-staged turbo-mixers}
- 5/165 . . . {consisting of a stator-rotor system with intermeshing teeth or cages}
- 5/167 . . . {with axial access to the mixing device at both its sides}
- 5/18 . Spray-mixers {; Mixing intersecting sheets of material, e.g. conical liquid sheets ([B01F 3/0473](#), [B01F 7/022](#), [B01F 9/025](#) take precedence)}
- 5/20 . . with nozzles {([B01F 3/04049](#) takes precedence; nozzles per se [B05B 1/00](#))}
- 5/205 . . . {for spraying a fluid on falling particles or on a liquid curtain}
- 5/22 . . with rotary {parts, e.g.} discs {([B01F 3/04035](#), [B01F 7/0075](#) take precedence)}
- 5/221 . . . {with a disc or a set of discs mounted on a shaft rotating about a vertical axis, on top of which the material to be thrown outwardly is fed}
- 5/223 {with repeated action, i.e. the material thrown outwardly being guided, by means provided on the surrounding casing, on top of the next lower disc}
- 5/225 . . . {for spraying a liquid on falling particles or on a liquid curtain ([B01F 5/223](#) takes precedence)}
- 5/226 . . . {the material being fed on both sides of a part rotating about a vertical axis}
- 5/228 . . . {the rotating part being composed of at least two cooperating members rotating independently about the same vertical axis}
- 5/24 . Falling-particle mixers, {e.g.} with repeated action {(spraying fluids on falling particles [B01F 5/205](#), [B01F 5/225](#))}
- 5/241 . . {Particle mixers uniting flows of material taken from different parts of a receptacle or from a set of receptacles (for liquids [B01F 3/0869](#); devices for emptying containers from the top with vertical passage located inside the containers [B65G 65/365](#))}
- 5/242 . . . {by means of conduits having inlet openings at different levels}
- 5/243 {by means of a central conduit or central set of conduits}
- 5/244 . . . {the receptacle being divided into compartments for receiving or storing the different components}
- 5/245 . . . {Flow collectors therefor}
- 5/246 . . {Falling-particle mixers comprising receptacles provided with fixed guiding elements, e.g. baffles, therein; Cross-mixers comprising crossing channels for guiding the falling particles}
- 5/247 . . {Falling-particle mixers comprising superimposed receptacles, the material flowing from one to the other, e.g. of the sandglass type (for liquids [B01F 3/0869](#))}
- 5/248 . . {the particles falling on a film flowing along the inner wall of a mixer}
- 5/26 . Falling-particle mixers with moving {or vibrating} means, e.g. stirrers, for increasing the mixing {([B01F 5/24](#) takes precedence)}
- 5/265 . . {using one central conveyor or several separate conveyors, e.g. belt or screw conveyors, vibrating tables, for discharging flows from receptacles, e.g. in layers}
- 7/00 Mixers with rotary stirring devices in fixed receptacles {, i.e. movement of the receptacle not being meant to effect the mixing ([B01F 13/08](#) takes precedence)}; Kneaders ([B01F 13/04](#) takes precedence {; devices especially adapted for mixing foundry sand [B22C 5/04](#))}**
- 7/00008 . {Stirrers, i.e. rotary stirring devices ([B01F 3/04539](#), [B01F 3/04588](#), [B01F 3/0478](#), [B01F 7/028](#), [B01F 11/0091](#) take precedence)}
- 7/00016 . . {Nature of the rotating mixing element}
- 7/00025 . . . {Stirrers with replaceable wearing elements; Wearing elements therefor}
- 7/00033 . . . {Characterised by the materials the stirrers are made of}
- 7/00041 {with particular surface characteristics, e.g. coated, rough}
- 7/0005 . . . {Deformable stirrers ([B01F 7/00208](#) takes precedence)}
- 7/00058 {with mechanical means to alter the position of the stirring elements}
- 7/00066 {deformable by centrifugal force}
- 7/00075 {the position of the stirring elements depending on the direction of rotation of the stirrer}
- 7/00083 . . . {Stirrers made by deforming a plate}
- 7/00091 . . {Mounting of the stirring elements on the stirrer shaft ([B01F 7/00208](#) takes precedence)}
- 7/001 . . . {Fixing of the stirrer to the shaft}
- 7/00108 . . . {Disposition with respect to the rotating axis}
- 7/00116 {parallel with respect to the rotating axis}
- 7/00125 {perpendicular with respect to the rotating axis}
- 7/00133 {oblique with respect to the rotating axis}
- 7/00141 {directly mounted on the rotating axis}
- 7/0015 {on the free end of the rotating axis}
- 7/00158 {having stirring elements connected to the stirrer shaft each by a single radial rod, other than open frameworks}
- 7/00166 {of the anchor type, i.e. the stirring elements being connected to the rods by one end and extending parallel to the shaft axis}
- 7/00175 {having stirring elements connected to the stirrer shaft each by two or more radial rods, e.g. the shaft being interrupted between the rods, or of crankshaft type ([B01F 7/00566](#) takes precedence)}
- 7/00183 . . . {with stirring elements moving with respect to the stirrer shaft, e.g. floating or comprising contracting chambers}
- 7/00191 . . . {having two or more mixing elements being concentrically mounted on the same shaft}
- 7/002 . . {Mounting of the rotating mixing element in respect to the receptacle}
- 7/00208 . . . {having elements for co operating with receptacle wall or bottom, e.g. for scraping ([B01F 7/165](#) takes precedence)}

- 7/00216 . . . {occupying substantially the whole interior space of the receptacle}
- 7/00225 . . . {eccentrically arranged}
- 7/00233 . . {Configuration of the rotating mixing element}
- 7/00241 . . . {Centrifugal stirrers, i.e. having a radial outflow or turbine-type, e.g. with means to guide the flow}
- 7/0025 . . . {with arms, paddles, vanes or blades}
- 7/00258 {pin shaped}
- 7/00266 {anchor shaped}
- 7/00275 {sickle shaped, i.e. curved in at least one direction}
- 7/00283 {rake shaped or grid shaped}
- 7/00291 {having vanes or blades, e.g. provided with orifices, extending parallel or oblique to the stirrer axis ([B01F 7/00233 takes precedence](#))}
- 7/003 {having holes in the surface}
- 7/00308 {paddle wheels}
- 7/00316 {the blades extending oblique to the stirrer axis}
- 7/00325 {the stirrer being a bent rod supported at one end only}
- 7/00333 {spoon-shaped}
- 7/00341 . . . {Propellers, i.e. stirrers having an axial outflow, e.g. of the ship or aircraft propeller type or having means on the propeller to guide the flow}
- 7/0035 {having holes in the surface}
- 7/00358 {with guiding tubes or tubular segments fixed to and surrounding the tips of the propeller blades, e.g. with supplementary mixing elements on the outside of the tubes or the segments}
- 7/00366 {the impeller being of airfoil, aerofoil type}
- 7/00375 {the impeller being of hydrofoil type}
- 7/00383 {the impeller being of Rushton type}
- 7/00391 . . . {Helices, i.e. stirrers comprising a helically shaped band; Stirrers composed of helically shaped band sections}
- 7/004 {having holes in the surface}
- 7/00408 {of the corkscrew type composed of a helically shaped band, e.g. flexible spiral springs}
- 7/00416 {screws; Worms; Stirrers composed of screw sections}
- 7/00425 {blade shaped}
- 7/00433 {ribbon shaped, i.e. with an open space between the helical ribbon flight and the rotating axis}
- 7/00441 {forming open frameworks or cages}
- 7/0045 . . . {with discs or disc like elements essentially perpendicular to the stirrer shaft axis, e.g. with stirring elements other than discs fixed thereon or with grooves on the sides of the discs}
- 7/00458 {having holes in the surface}
- 7/00466 {with separate elements other than discs fixed on the discs}
- 7/00475 {the discs being made by deforming flat discs}
- 7/00483 {cup shaped, e.g. semi sphere}
- 7/00491 {with interconnected discs, forming open frameworks or cages}
- 7/005 . . . {shaped as cylinders, balls or rollers}
- 7/00508 {having holes in the surface}
- 7/00516 {Balls}
- 7/00525 {Rollers}
- 7/00533 {comprising paddles fixed thereon, e.g. with a total a diameter close to that of the surrounding receptacle}
- 7/00541 {with cones, e.g. funnels}
- 7/0055 {having holes in the surface}
- 7/00558 . . . {provided with brushes, sieves, grids, chains or springs ([B01F 7/00408 takes precedence](#))}
- 7/00566 . . . {with rigid wires or flexible rods}
- 7/00575 {with a bent rod of non helical configuration supported at one end}
- 7/00583 . . . {Openwork frame or cage stirrers not provided for elsewhere}
- 7/00591 . . . {provided with tubes for guiding the material}
- 7/006 . . . {having additional elements on the stirrer, other than for mixing}
- 7/00608 {having elements for disintegrating, e.g. for milling ([B01F 7/1625](#), [B01F 7/00358 take precedence](#))}
- 7/00616 {having elements for cutting, e.g. knives}
- 7/00625 . . . {Multistage systems, i.e. with a plurality of mixing elements mounted in sequence on the same axis}
- 7/00633 {provided with a plurality of similar elements}
- 7/00641 {provided with a plurality of dissimilar elements}
- 7/0065 {comprising helical elements and paddles}
- 7/00658 . {Configuration of the rotating axis}
- 7/00666 . . {Nature of the axis}
- 7/00675 . . . {The axis being a flexible shaft}
- 7/00683 . . {Construction of the axis}
- 7/00691 . . . {The axis being composed of interconnected parts}
- 7/007 . . . {The axis being a hollow cylinder, e.g. for feeding a component ([B01F 7/024 takes precedence](#))}
- 7/00708 . . . {The axis comprising stirring means and feeding or discharging means fixed on the same axis}
- 7/00716 . . . {the axis being adjustable in length, e.g. telescopic}
- 7/00725 . . {Connection of the rotating axis with the drive}
- 7/00733 . {Submerged mixers, i.e. with a submerged stirrer and drive unit, e.g. displaceable on a vertical beam ([submerged stirring devices for introducing a gas in a liquid B01F 3/04595](#))}
- 7/00741 . . {Vertical beam constructions therefor}
- 7/0075 . {the mixer being composed of a stator-rotor system with movable slits between surfaces facing each other, e.g. having intermeshing teeth or cylinders or having orifices ([with axial inflow and radial outflow for batch mixing B01F 7/1625](#); for mixtures of cement with other substances [B28C 5/0881](#); for plastics [B29B 7/402](#))}
- 7/00758 . . {the stator rotor system being formed by substantial flat surfaces}
- 7/00766 . . . {provided with intermeshing elements}
- 7/00775 . . . {provided with ribs, ridges or grooves on one surface}
- 7/00783 . . . {the surfaces having a conical shape}

- 7/00791 . . . {the relative position of the stator and the rotor, gap in between or gap with the walls being adjustable}
- 7/008 . . {the stator rotor system being formed by conical or cylindrical surfaces, e.g. curved surfaces}
- 7/00808 . . . {provided with intermeshing elements}
- 7/00816 . . . {provided with ribs, ridges or grooves on one surface}
- 7/00825 . . . {the surfaces having a conical shape}
- 7/00833 . . . {the relative position of the stator and the rotor, gap in between or gap with the walls being adjustable}
- 7/00841 . . {the mixer being composed of a stator-rotor system being formed by bearing elements, e.g. roller bearings}
- 7/0085 . {the stirring devices being composed of two independently driven coaxial rotors facing each other, e.g. having intermeshing teeth}
- 7/00858 . . {with rotating surfaces facing each other}
- 7/00866 . . . {provided with intermeshing elements}
- 7/00875 . . . {provided with ribs, ridges or grooves on one surface}
- 7/00883 . . {with rotating surfaces next to one another, e.g. on parallel axis}
- 7/00891 . . . {provided with intermeshing elements}
- 7/009 . . . {provided with ribs, ridges or grooves on one surface}
- 7/00908 . {Pipe mixers, i.e. mixing material flowing continuously through pipes, e.g. column mixers}
- 7/00916 . {the stirrer being driven by the moving material}
- 7/00925 . {characterised by the orientation or disposition of the rotor axis, e.g. a plurality of mixing shafts with different or random orientation}
- 7/00933 . . {Variable, e.g. tiltable during the operation}
- 7/00941 . . . {the orientation of the rotating shaft being adjustable in the interior of the receptacle, e.g. by tilting the stirrer shaft during the mixing}
- 7/0095 . . . {the position of the rotating shaft being adjustable in the interior of the receptacle, e.g. to locate the stirrer in different locations during the mixing}
- 7/00958 . . {with a plurality of rotation axis}
- 7/00966 . . . {having different inclinations, e.g. non parallel}
- 7/00975 . . . {parallel}
- 7/00983 . . . {perpendicular}
- 7/00991 . . . {planetary ([B01F 7/14](#) and [B01F 7/30](#) take precedence)}
- 7/02 . with stirrers rotating about a horizontal or inclined axis
- 7/021 . . {rotating about an inclined axis}
- 7/022 . . {comprising liquid feeding, e.g. spraying means ([in general B01F 15/0203](#))}
- 7/024 . . . {the liquid being fed through the shaft of the stirrer}
- 7/025 . . {the receptacle being divided into compartments, e.g. with porous divisions}
- 7/027 . . {the receptacles being tiltable, e.g. for emptying ([for concrete B28C 5/141](#), [B28C 5/161](#))}
- 7/028 . . {provided with buckets}
- 7/04 . . with paddles, {blades} or arms
- 7/041 . . . {comprising two or more shafts, e.g. in consecutive mixing chambers ([B01F 7/025](#) takes precedence)}
- 7/042 {with intermeshing paddles}
- 7/043 {with stirrers rotating at different speeds, or rotating in opposite directions about the same axis, e.g. with a first stirrer surrounded by a tube inside a second stirrer ([B01F 7/045](#) takes precedence)}
- 7/045 {with stirrers facing each other, i.e. being supported by opposite walls of the receptacle}
- 7/046 {characterised by the shape of the stirrer, i.e. of Z- or S-shape}
- 7/047 {with all the shafts in the same receptacle ([B01F 7/042](#), [B01F 7/043](#), [B01F 7/045](#), [B01F 7/046](#) take precedence)}
- 7/048 . . . {the paddles co-operating, e.g. intermeshing, with elements on the receptacle wall}
- 7/06 . . with propellers
- 7/063 . . . {co-operating with stationary guiding means, e.g. baffles}
- 7/066 {the guiding means being tubes surrounding the propellers}
- 7/08 . . with helices {or sections of helices ([with a housing closely surrounding the helices, i.e. extruders, B29C 47/38](#))}
- 7/081 . . . {with at least two helices in the same receptacle}
- 7/082 {the helices being closely surrounded by a casing ([for mixing or kneading plastics B29B 7/48](#))}
- 7/083 {the stirrers being composed of helices and paddles on the same shaft, e.g. helically arranged ovally shaped paddles}
- 7/085 {the helices intermeshing to knead the mixture}
- 7/086 . . . {having a single helice closely surrounded by a casing ([for mixing or kneading plastics B29B 7/42](#))}
- 7/087 . . . {with two or more helices in respective separate casings, e.g. one casing inside the other}
- 7/088 . . . {the stirrers being composed of two helices with opposite pitch on the same shaft; the stirrers being composed of two helices on the same axis, driven in opposite directions or at different speeds}
- 7/10 . . with rotary discs {, e.g. provided with orifices; or the receptacle being divided into compartments ([pressing the components through orifices on rotating elements B01F 5/0682](#); [pressing the components axially through a rotor-stator system, at least the stator being a perforated plate B01F 5/0683](#))}
- 7/105 . . . {with two or more parallel shafts provided with perpendicularly mounted discs, e.g. lens shaped, one against the other on each shaft and in circumferential contact with the discs on the other shafts, e.g. for cleaning}
- 7/12 . . with {rotary} cylinders {, e.g. having special profile cross-section ([B01F 7/145](#) takes precedence)}
- 7/14 . . with stirrers having planetary motion {, i.e. rotating about their own axis and about a horizontal sun axis}
- 7/145 . . . {the stirrers being cylinders, balls or gears}

- 7/16 . . with stirrers rotating about a substantially vertical axis
- 7/1605 . . {with relative displacement, e.g. vertical, between stirrer and receptacle for bringing them into operative position, e.g. with an independent receptacle or with means to close the receptacle; Fixing elements for the receptacle}
- 7/161 . . . {with vertical displacement of the stirrer, e.g. with additional means for axially displacing or for pivoting the stirrer about a vertical axis in order to co-operate with several receptacles}
- 7/1615 . . . {with the stirrer-head pivoting about a horizontal axis to bring the stirrer in and out of operative position, e.g. with a receptacle pivoting about a horizontal axis for emptying}
- 7/162 . . {the stirrers being driven from the bottom of the receptacle}
- 7/1625 . . {the stirrers having a central axial inflow and a substantially radial outflow, e.g. centrifugal rotors with several rotors rotating in opposite direction}
- 7/163 . . . {with the inflow from one side only, e.g. stirrers placed on the bottom of the receptacle, or used as a bottom discharge pump}
- 7/1635 {the stirrers co-operating with stationary guiding elements, e.g. surrounding stators or intermeshing stators (B01F 7/164 takes precedence)}
- 7/164 . . . {the stirrers co-operating with surrounding stators, or with intermeshing stators, e.g. comprising slits, orifices or screens}
- 7/1645 . . . {the stirrers co-operating with stationary guiding elements (B01F 7/164 takes precedence)}
- 7/165 . . {Pan-type mixers, i.e. mixers in which the stirring elements move along the bottom of a pan-shaped receptacle (with stirring elements moving along the wall or bottom of the receptacle for scraping in general B01F 7/00208)}
- 7/1655 . . {the stirrers being additionally moved radially, or oscillating about an axis perpendicular to the stirrer axis (B01F 7/30 takes precedence)}
- 7/166 . . {with stirrers rotating at different speeds or in opposite direction about the same axis}
- 7/1665 . . {having two or more stirrers on separate shafts, e.g. the shape of the receptacle matching with the periphery of the rotating stirrers (B01F 7/166 takes precedence)}
- 7/167 . . . {the receptacle being subdivided in adjacent compartments}
- 7/1675 . . {co-operating with deflectors or baffles fixed to the receptacle (B01F 7/1635, B01F 7/1645 take precedence)}
- 7/168 . . . {the baffles being of cylindrical shape, e.g. a mixing chamber surrounding the stirrer, the baffle being displaced axially to form an interior mixing chamber}
- 7/1685 . . . {the baffles being adjustable or movable (B01F 7/168 takes precedence)}
- 7/169 . . {the receptacle being divided into superimposed compartments}
- 7/1695 . . {with an independent receptacle-stirrer unit, the stirrer being adapted to be coupled to a drive mechanism}
- 7/18 . . with paddles or arms {(B01F 7/162, B01F 7/165 take precedence)}
- 7/183 . . . {the paddles co-operating, e.g. intermeshing, with elements fixed on the receptacle walls}
- 7/186 {the elements being vertically arranged, e.g. fixed on the bottom}
- 7/20 . . . with fixed axis
- 7/22 . . with propellers {(B01F 7/162 takes precedence)}
- 7/225 . . . {forcing the material through orifices or slits, e.g. in a stationary part}
- 7/24 . . with helices {or screws (B01F 7/30 takes precedence)}
- 7/241 . . . {with at least two helices, e.g. intermeshing helices}
- 7/242 . . . {the helices being mounted centrally in the receptacle for mixing in batches (B01F 7/241 takes precedence)}
- 7/243 {the helices being surrounded by a guiding tube}
- 7/244 {combined with means for uniting flows of material taken from different parts of the receptacle}
- 7/245 {with conical helices}
- 7/246 {the helices having a diameter only slightly less than the diameter of the receptacle (B01F 7/245 takes precedence)}
- 7/247 {with additional mixing elements other than helices; having inner and outer helices; with helices surrounding a guiding tube}
- 7/248 . . . {the material flowing continuously through the receptacle}
- 7/26 . . with rotary discs {, e.g. provided with orifices, or co-operating with loose mixing particles, provided with feeding or discharging means or provided with sieves for continuously mixing (pressing the components through orifices on rotating elements B01F 5/0682; pressing the components axially through a rotor-stator system, at least the stator being a perforated plate B01F 5/0683)}
- 7/28 . . with {rotary} cylinders {, e.g. having special profile cross-section}
- 7/285 . . . {with hollow cylinders or cones, e.g. perforated or having special stirring elements thereon}
- 7/30 . . with stirrers having planetary motion {, i.e. rotating about their own axis and about a vertical sun axis}
- 7/302 . . . {using only helical stirrers}
- 7/305 . . . {with at least one stirrer mounted on the sun axis}
- 7/307 . . . {the stirrers being cylinders with their circumference in contact with the bottom of the receptacle and rotating about an axis at an angle to the sun axis, e.g. mixers of the Muller type}
- 7/32 . . with openwork frames or cages
- 9/00 Mixers with rotating receptacles, {i.e. the rotary motion is imparted to effect the mixing} ({B01F 11/0002,} B01F 13/04 take precedence); {Mixing the contents of packages or like independent containers by rotating them}**
- 9/0001 . {the receptacles being submitted to rotation about two different axes, e.g. receptacles having planetary motion}
- 9/0003 . {Use of centrifuges for mixing}

9/0005	. {the receptacles rotating about an axis at an angle to their longitudinal axis}	2009/0063	. . . {inclined}
9/0007	. {the material flowing continuously through the receptacles from feed to discharge, e.g. the feed and discharge being at the same end}	2009/0065	. . . {variable, e.g. tiltable during the operation}
9/0009	. . {with at least one screw inside the receptacle for feeding or discharging, e.g. the axis of screw and receptacle being parallel}	2009/0067	. . . {with a receptacle rotating around two or more axes}
9/001	. . {the feed and discharge openings being at opposite ends of the receptacle}	2009/0069	. . . . {having different, non-perpendicular inclinations, e.g. skew axes}
9/0012	. . {the feed and discharge openings being at the same side of the receptacle}	2009/007	. . . . {being parallel axes}
9/0014	. {Mixing the contents of packages or like independent containers, e.g. tins, bottles, by rotating them}	2009/0072	. . . . {being perpendicular axes}
9/0016	. . {the containers being supported by driving means, e.g. by rotating rollers}	2009/0074	. . . . {arranged for planetary motion}
9/0018	. . {the containers being modified for coupling to rotating frames or the like; Containers therefor; Coupling means therefor}	2009/0076	. . . {with a plurality of rotating receptacles}
9/002	. . . {for test-tubes or like small containers, e.g. containing blood samples}	2009/0078	. . . . {having axes of different, non-perpendicular inclinations}
9/0021	. . . {Several containers being held in a support for simultaneous mixing, optionally with feeding and discharging means, e.g. for bottles in crates}	2009/0079	. . . . {having parallel axes}
9/0023	. . {Imparting a composite movement to a plurality of bottles}	2009/0081	. . . . {having perpendicular axes}
9/0025	. . . {by means of a rotary table provided with a plurality of bottle grippers at its periphery, an additional movement being imparted to the grippers}	2009/0083	. . . . {being concentrically arranged}
9/0027	. . . {the bottles being submitted to a screw-motion about an axis perpendicular to the axis of the bottles and lying intermediate the ends of the bottles}	2009/0085	. . . . {arranged for planetary motion}
9/0029	. . . {essentially by rotating bottles about an axis perpendicular to the bottle axis and lying outside the bottles, using a rotating drum provided with pockets for the bottles at its periphery}	2009/0087	. . {Disposition or configuration of the receptacles}
9/003	. . {Construction details of the holders for the independent packages or receptacles}	2009/0089	. . . {Multi-compartment receptacles}
9/0032	. {Parts or components, e.g. receptacles, feeding or discharging means (B01F 9/0009 takes precedence)}	2009/009	. . . {Configuration of the interior}
9/0034	. . {Receptacles, e.g. provided with liners}	2009/0092	. . . . {provided with baffles, plates or bars on the wall or the bottom}
9/0036	. . . {characterised by the shape or cross-section of the receptacle, e.g. of Y -, Z -, S -, or X shape}	2009/0094	. . . . {provided with guide tubes on the wall or the bottom}
9/0038	. . . . {Non-cylindrical sections, e.g. elliptical, irregular}	2009/0096	. . . {Nature of the receptacle}
9/004	. . . . {Polygonal sections, e.g. triangular, square}	2009/0098	. . . . {Surface characteristics, e.g. coated, rough}
9/0041	. . . . {Conical, double-conical, diabolo shapes}	9/02	. rotating about a horizontal or inclined axis, e.g. drum mixers
9/0043	. . . . {Cubic, cubical, polyhedral shapes}	9/025	. . {comprising liquid spraying devices}
9/0045	. . . . {S shapes}	9/04	. . without bars {, i.e. without mixing elements; Characterised by the shape or cross-section of the receptacle, e.g. of Y, Z, S or X shape; Cylindrical receptacles rotating about an axis at an angle to their longitudinal axis}
9/0047	. . . . {Spherical shapes}	9/06	. . with fixed bars {, i.e. stationary, or fixed on the receptacle}
9/0049	. . . . {Toroidal shapes}	9/08	. . with {moving, e.g.} rotating stirring devices {, i.e. moving with respect to the receptacle}
9/005	. . . . {V or W shapes}	9/10	. rotating about a {substantially} vertical axis
9/0052	. . . . {X shapes}	9/103	. . {co-operating with stationary mixing elements (B01F 9/106 takes precedence)}
9/0054	. . . . {Y or double Y shapes}	9/106	. . {the receptacle comprising a rotary part, e.g. the bottom, and a stationary part, e.g. the wall, with optional use of a stirrer; the receptacle comprising parts moving in opposite directions}
2009/0056	. {Constructional aspects of the rotating receptacles}	9/12	. . with {rotary} paddles or arms {, e.g. movable out of the receptacle (dough mixers or kneaders with stirrers rotating about an inclined axis A21C 1/04)}
2009/0058	. . {Disposition of the rotor axis}	9/125	. . . {Pan-type mixers, i.e. having stirrers moving along the bottom of a pan-shaped receptacle}
2009/0059	. . . {horizontal}	9/14	. . with propellers
2009/0061	. . . {vertical}	9/16	. . with helices {, e.g. rotating about an inclined axis}
		9/18	. . with rotary discs
		9/20	. . with {rotary} cylinders
		9/22	. with stirrers having planetary motion {(receptacles having planetary motion B01F 9/0001)}
		11/00	Mixers with shaking, oscillating, or vibrating mechanisms (B01F 13/04 takes precedence)
		11/0002	. {with a mixing receptacle rotating alternately in opposite directions, or rotating about an axis which intersects the receptacle axis at an angle}

- 11/0005 . {Mixing the contents of independent containers, e.g. test-tubes, by shaking or oscillating them}
- 11/0008 . . {Holders therefor}
- 11/0011 . . {for beverage bottles, e.g. within crates or with feeding means for the bottles}
- 11/0014 . . {with supporting means moving in a horizontal plane, e.g. describing an orbital path for moving the containers about an axis which inserts the receptacle axis at an angle ([B01F 11/0017](#), [B01F 11/0022](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence)}
- 11/0017 . . {by pivoting the containers about an axis ([B01F 11/0025](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence)}
- 11/002 . . . {the containers being of the sandglass-type or being linked with their openings}
- 11/0022 . . {the containers being submitted to a rectilinear movement ([B01F 11/0025](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence)}
- 11/0025 . . {the containers being submitted to a composite movement not in a horizontal plane, e.g. rectilinear and pivoting}
- 11/0028 . . {the containers being submitted to a wobbling movement}
- 11/0031 . . {the vibrations being caused by an unbalanced rotating member}
- 11/0034 . . {the vibrations being caused by electromagnets}
- 11/0037 . . {with means for transporting test tubes to and from the stirring device}
- 11/004 . . {the vibrations being caused by piezoelectric elements}
- 11/0042 . {Comprising a receptacle to only a part of which the movement is imparted; Periodically deforming flexible tubular members through which the material is flowing}
- 11/0045 . . {comprising a receptacle with a deformable part, e.g. a membrane, to which a motion is imparted}
- 11/0048 . . . {the motion being a linear movement to one part of the receptacle}
- 11/0051 . . . {the motion being a transversal movement to one part of the receptacle, e.g. by moving alternatively up and down the opposite edges of a closing lid to cause a pumping action}
- 11/0054 . {having a rotary stirrer oscillating axially ([having rotary stirrers with additional radial movement, or oscillating about an axis perpendicular to the stirrer axis](#), [B01F 7/1655](#))}
- 11/0057 . . {for material flowing continuously axially therethrough}
- 11/006 . {having an annular trough vibrating about its central axis}
- 11/0062 . {having a receptacle submitted to a composite movement, i.e. at least one movement being vibratory or oscillatory}
- 11/0065 . {the material being contained in a flexible bag submitted to periodical deformation}
- 11/0068 . {having a vibrating receptacle provided with stirring elements, e.g. independent stirring elements}
- 11/0071 . {the material being directly submitted to a pulsating movement, e.g. by means of an oscillating piston or air column ([solvent extraction of liquid solution comprising vibrating mechanisms](#) [B01D 11/0438](#); [stationary reactors of pulsating type](#) [B01J 19/185](#))}
- 11/0074 . . {Mixing by successively aspirating a part of the mixture in a conduit, e.g. a piston, and reinjecting it through the same conduit into the receptacle}
- 11/0077 . {for material continuously moving therethrough ([B01F 11/0042](#), [B01F 11/0057](#), [B01F 11/006](#), [B01F 11/0241](#) take precedence)}
- 11/008 . {the stirrers performing an oscillatory, vibratory or shaking movement ([B01F 11/0054](#), [B01F 11/04](#) take precedence)}
- 11/0082 . . {performing a rectilinear reciprocating movement}
- 11/0085 . . {performing a superposed additional movement other than oscillation, vibration or shaking}
- 11/0088 . . {performing an oscillatory movement about an axis}
- 11/0091 . . {Stirrers constructions}
- 11/0094 . {having a vibrating receptacle ([B01F 11/0002](#), [B01F 11/0005](#), [B01F 11/006](#), [B01F 11/0062](#), [B01F 11/0068](#) take precedence)}
- 11/0097 . {Drives therefor, e.g. crank mechanisms ([B01F 11/0005](#) takes precedence)}
- 11/02 . Mixing by means of {high-frequency, e.g.} ultrasonic vibrations {, e.g. jets impinging against a vibrating plate}
- 11/0208 . . {the vibrations being generated inside a mixing device without external drive, e.g. by a flow of material causing a knife to vibrate or using nozzles}
- 11/0216 . . {the material being forced through a narrow vibrating slit}
- 11/0225 . . {comprising a supplementary stirring element}
- 11/0233 . . . {the vibrations being generated by the rotation of the stirring element}
- 11/0241 . . {for material continuously moving through a tube, e.g. by deforming the tube ([B01F 11/0208](#) takes precedence)}
- 11/025 . . . {with a vibrating element inside the tube}
- 11/0258 . . {using a vibrating element inside a receptacle}
- 11/0266 . . {with vibrating the receptacle or part of it}
- 11/0275 . . . {caused by hitting or striking the receptacle}
- 11/0283 . . {transmitting the vibratory energy by means of a fluid, e.g. by means of air shock waves}
- 11/0291 . . {Methodical aspects; Controlling}
- 11/04 . with pendulum stirrers {, i.e. with stirrers suspended so as to oscillate about fixed points or axes ([stirrers per se](#) [B01F 11/0091](#))}
- 13/00 Other mixers; Mixing plant, including combinations of {mixers, e.g. of} dissimilar mixers**
- 13/0001 . {Mixers using electrical energy, other than for driving a motor ([B01F 3/0407](#), [B01F 3/04978](#), [B01F 3/0815](#), [B01F 3/1235](#) take precedence)}
- 13/0003 . . {the energy being electrical energy working on the ingredients or compositions for mixing them}
- 13/0005 . . {the energy being electric fields for electrostatically charging of the ingredients or compositions for mixing them}
- 13/0006 . . {the energy being magnetic or electromagnetic energy, radiation working on the ingredients or compositions for or during mixing them}
- 13/0008 . . {the energy being in the form of a laser to modify the characteristics or conditions of the products, e.g. for heating}

- 13/001 . . {the energy being particle radiation working on the ingredients or compositions for or during mixing them}
 - 13/0011 . {Mixers in which the mixing of the components is achieved by natural or induced convection}
 - 13/0013 . {Mixers with an endless belt for transport of the material, e.g. in layers or with mixing means above or at the end of the belt}
 - 13/0015 . {Mixers having moving endless chains or belts, e.g. provided with paddles, as mixing elements}
 - 13/0016 . {Movable or transportable mixing devices or plants}
 - 13/0018 . . {Movable mixing devices, i.e. apt to be shifted or displaced from one place to another, e.g. by human force}
 - 13/002 . . . {portable during use, e.g. hand-held [\(B05C 17/00553 takes precedence, whisks comprising mixing wires A47J 43/1087\)](#)}
 - 13/0022 {Small portable bottles, flasks, vials, e.g. with means for mixing ingredients or for homogenizing their content, e.g. by hand shaking}
 - 13/0023 {Of the syringe, cartridge type}
 - 13/0025 {Of the pipette type}
 - 13/0027 {Of the hand-held gun type}
 - 13/0028 {Stirring devices adapted to be connected to a standard boring machine or other kind of domestic tool}
 - 13/003 . . . {adapted to be mounted during use on a standard, base or support}
 - 13/0032 . . . {movable by mechanical means, e.g. hoisting systems, grippers, lift trucks}
 - 13/0033 . . . {movable by human force, e.g. kitchen or table devices}
 - 13/0035 . . {vehicle mounted [\(mixing devices for cement mounted on vehicles with provisions for mixing during transport B28C 5/42\)](#)}
 - 13/0037 . . . {the vehicle being self-propelled, e.g. truck mounted, provided with a motor, driven by tracks [\(B01F 13/0038 - B01F 13/0047 take precedence\)](#)}
 - 13/0038 . . . {the vehicle being a carriage moving or driving along fixed or movable beams or bridges}
 - 13/004 . . . {the vehicle being a trailer which is hand moved or coupled to self propelling vehicles}
 - 13/0042 . . . {the vehicle being moved by human force}
 - 13/0044 . . . {using rails for guiding the mixing installation during moving or displacing}
 - 13/0045 . . . {using sledges or skids for moving or displacing the mixing installation}
 - 13/0047 . . . {using driven tracks, caterpillars, crawler for moving or displacing the mixing installation}
 - 13/0049 . . {Floating}
 - 13/005 . {Mixers with loose mixing elements, e.g. balls, in a receptacle}
 - 13/0052 . . {using balls as loose mixing element}
 - 13/0054 . . {using bubbles as loose mixing element}
 - 13/0055 . . {using sliders or cylindrical elements as loose mixing element}
 - 13/0057 . . {using springs as loose mixing element}
 - 13/0059 . {Micromixers}
 - 13/0061 . . {using specific means for arranging the streams to be mixed}
 - 13/0062 . . . {Hydrodynamic focussing}
 - 13/0064 . . . {Mixing chamber}
 - 13/0066 . . . {Interdigital streams, i.e. lamellae}
 - 13/0067 {The interdigital streams being concentric lamellae}
 - 13/0069 . . {the components flowing in the form of droplets [\(B01F 3/0807 take precedence\)](#)}
 - 13/0071 . . . {the components to be mixed being combined in a single independent droplet, e.g. these droplets being divided by a non-miscible fluid or consisting of independent droplets}
 - 13/0072 . . . {the components being formed by independent droplets which are alternated, the mixing of the components being achieved by diffusion between droplets}
 - 13/0074 . . {using mixing means not otherwise provided for [\(B01F 5/00, B01F 7/00, B01F 9/00, B01F 11/00, B01F 13/02 and B01F 13/08 take precedence\)](#)}
 - 13/0076 . . . {using electrohydrodynamic [EHD] or electrokinetic [EKI] phenomena to mix or move the fluids}
 - 13/0077 . . . {using magnetohydrodynamic [MHD] phenomena to mix or move the fluids}
 - 13/0079 . . . {using heat to mix or move the fluids}
 - 13/0081 . . . {using induced convection or movement in the mixture to mix or move the fluids without mechanical means, e.g. thermodynamic instability, strong gradients, etc.}
 - 13/0083 . . . {using surface tension to mix, move or hold the fluids}
 - 13/0084 {using hydrophilic/hydrophobic surfaces}
 - 13/0086 {using roughness of the surfaces}
 - 13/0088 . . . {using a biological motor, i.e. biological molecules which are activated and movement is induced to stir a fluid}
 - 13/0089 . . . {using coupled electrorotation [CER] phenomena to mix or move fluids, or to sense properties of the mixture}
 - 13/0091 . . . {using ciliary stirrers to move or stir the fluids}
 - 13/0093 . . . {the mixing being achieved by diffusion between layers [\(B01F 13/0069 takes precedence\)](#)}
 - 13/0094 . . . {the mixing being performed in a mixing chamber where the products are brought into contact}
 - 13/0096 . . . {using turbulence on microscale}
 - 13/0098 . {Mixing after turning the mixing vessel upside down}
 - 13/02 . Mixers with gas {or liquid} agitation, e.g. with air supply tubes [{\(B01F 3/04106 takes precedence; supplying ingredients in concrete mixers with a pneumatic or hydraulic conveyor B28C 7/062; fluidising devices facilitating filling or emptying of containers B65D 88/72\)}](#)
- NOTE**
- The agitating fluid is not meant to mix with the material
- 13/0205 . . {Methods}
 - 13/0211 . . {comprising supplementary stirring elements}
 - 13/0216 . . . {the gas being introduced through the shaft of the stirring element}
 - 13/0222 . . {for mixing liquids [\(B01F 13/0211, B01F 13/0233, B01F 13/0255 take precedence\)](#)}

- 13/0227 . . {for mixing material moving continuously therethrough, e.g. using impinging jets}
- 13/0233 . . {in receptacles having guiding conduits therein, e.g. for feeding the gas to the bottom of the receptacle}
- 13/0238 . . . {with vertical conduits through which the material is being moved upwardly driven by the fluid}
- 13/0244 {with a central conduit or a central set of conduits}
- 13/025 {involving gas diffusers at the bottom}
- 13/0255 . . {in receptacles with gas supply only at the bottom ([B01F 13/0233 takes precedence](#))}
- 13/0261 . . . {through orifices arranged around a central cone ([B01F 13/0266 takes precedence](#))}
- 13/0266 . . . {with means for modifying the gas pressure or for supplying gas at different pressures or in different volumes at different parts of the bottom}
- 13/0272 . . {by blowing gas on the material from above}
- 13/0277 . . {Controlling}
- 13/0283 . . {Parts, e.g. diffusion elements; Accessories}
- 13/0288 . . {Storing receptacles provided with separate mixing chambers}
- 13/0294 . . {Plants}
- 13/04 . Mixers combined with safety devices ([safety devices in general F16P](#))}
- 13/042 . . {with a safety or relief valve}
- 13/045 . . {Safety devices concerning the operation of the mixer}
- 13/047 . . . {with locking, blocking or interlocking mechanisms for preventing operation of the actuation mechanism of the mixing device}
- 13/06 . Mixers adapted for working at sub- or super-atmospheric pressure {, e.g. combined with defoaming}
- 13/065 . . {Working at super-atmospheric pressure}
- 13/08 . Magnetic mixers {; Mixers having magnetically driven stirrers}
- 13/0809 . . {the mixture being directly submitted to an electromagnetic field without use of a stirrer, e.g. for material comprising ferromagnetic particles, or for molten metal}
- 13/0818 . . {using independent floating stirring elements}
- 13/0827 . . {using supported or suspended stirring elements}
- 13/0836 . . . {using an axis supported in several points for mounting the stirring element}
- 13/0845 . . . {using a bearing, tube, opening or gap for internally supporting the stirring element}
- 13/0854 . . . {supporting the stirring element in one point}
- 13/0863 . . . {using a rod for supporting the stirring element, e.g. stirrer sliding on a rod or mounted on a rod sliding in a tube}
- 13/0872 . . . {using a stud for supporting the stirring element}
- 13/0881 . . . {using a wire for supporting or suspending the stirring element, e.g. stirrer sliding on a wire}
- 13/089 . . . {the stirring element being suspended by one point}
- 13/10 . Mixing plant, including combinations of {mixers, e.g. of} dissimilar mixers ([B01F 13/0294 takes precedence](#))}
- 13/1002 . . {for granular material}
- 13/1005 . . . {with several silos arranged in a row or around a central delivery point, e.g. provided with proportioning means}
- 13/1008 {the silos being arranged in a circular configuration, i.e. in a circle around a central delivery point}
- 13/1011 . . . {involving other than mixing operations, e.g. milling, sieving, drying}
- 13/1013 . . {Combinations of similar mixers, e.g. with rotary stirring devices in two or more receptacles ([B01F 13/1002 takes precedence](#))}
- 13/1016 . . . {in two or more consecutive, i.e. successive, mixing receptacles or being consecutively arranged}
- 13/1019 . . . {in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle}
- 13/1022 . . . {mixing simultaneously in two or more mixing receptacles}
- 13/1025 . . {Combinations of dissimilar mixers ([B01F 13/1002 takes precedence](#))}
- 13/1027 . . . {with consecutive receptacles}
- 13/103 {with moving and non-moving stirring devices}
- 13/1033 . . . {with moving and non-moving stirring devices in the same receptacle}
- 13/1036 . . . {in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle}
- 13/1038 . . . {mixing simultaneously in two or more mixing receptacles}
- 13/1041 . . {comprising mixers specially adapted for mixing in combination with disintegrating ([B01F 7/048](#), [B01F 13/1002 take precedence](#))}
- 13/1044 . . . {Devices with one shaft, provided with mixing and milling tools, e.g. using balls or rollers as working tools; Devices with two or more tools rotating about the same axis}
- 13/1047 . . . {Devices with consecutive working receptacles, e.g. with two intermeshing tools in one of the receptacles ([B01F 13/1044 takes precedence](#))}
- 13/105 . . . {Devices with several tools rotating about different axis in the same receptacle}
- 2013/1052 . . {Mixing in several steps, e.g. successive steps}
- 13/1055 . . {Mixing plant with mixing receptacles receiving material dispensed from several component receptacles, e.g. paint tins}
- 13/1058 . . . {with component receptacles fixed in a circular configuration on a horizontal table, e.g. the table being able to be indexed about a vertical axis}
- 13/1061 . . . {with means for customizing the mixture on the point of sale, e.g. by sensing, receiving, analysing information about the characteristics of the mixture to be made}
- 13/1063 {using a computer for controlling information and converting it in a formula and a set of operation instructions, e.g. on the point of sale}
- 13/1066 . . . {using stored recipes for determining the composition of the mixture to be produced, i.e. for determining the amounts of the basic components to be dispensed from the component receptacles}

- 13/1069 . . . {using data, i.e. barcodes, 3D codes or similar type of tagging information, as instruction or identification codes for controlling the dispensing and mixing operations}
- 13/1072 . . {Plants with a plurality of mixing receptacles or mixing tools, e.g. the receptacles or tools being able to be indexed into different working positions along a line or along a circle}
- 2013/1075 . . {combining mixing with other treatments}
- 2013/1077 . . . {with disintegrating}
- 2013/108 {by cutting}
- 2013/1083 {by crushing or breaking}
- 2013/1086 {by grinding or milling}
- 2013/1088 {and irradiating}
- 2013/1091 . . . {with chemical reactions}
- 2013/1094 . . . {with coating}
- 2013/1097 . . . {with drying}
- 15/00 Accessories for mixers {; Auxiliary operations or auxiliary devices; Parts or details of general application}**
- 15/00006 . {Mixing heads comprising a driven stirrer ([mixing heads without driven stirrer B01F 5/0077](#))}
- 15/00012 . . {the stirrer being provided with a surrounding stator}
- 15/00019 . {Washing or cleaning mixers, e.g. using knockers or scrapers; Inhibiting build-up of material on machine parts ([cleaning in general B08B](#))}
- 15/00025 . . {using a fluid}
- 15/00032 . . . {by means of jets of fluid, e.g. air}
- 15/00038 . . {using mechanical elements}
- 15/00045 . . . {using a brush for cleaning out rests of products}
- 15/00051 . . . {using pushers, i.e. a piston, for pushing out rests of products}
- 15/00058 . . . {using scrapers for cleaning mixers}
- 15/00064 . . {using one or some of the components of the mixture to wash-out the mixer}
- 15/00071 . . {Working under sterile conditions; Sterilizing the mixer or parts thereof ([sterilizing in general A61L](#))}
- 2015/00077 . {Use of general mechanical engineering elements in mixing devices}
- 2015/00084 . . {Sealings}
- 2015/0009 . . . {for laboratory mixers}
- 2015/00097 . . . {Fluid sealings, e.g. using liquids or air under pressure which is leaking into the mixing receptacle}
- 2015/00103 . . . {comprising a stationary member in frontal contact with a movable member}
- 2015/0011 . . {Bearings}
- 2015/00116 . . {Lubricating systems}
- 15/00123 . {Controlling; Testing; Measuring ([B01F 15/0408 takes precedence](#))}
- 15/00129 . . {Measuring operational parameters ([B01F 15/00201](#) and [B01F 15/00207 take precedence](#))}
- 15/00136 . . . {Measuring flow rate}
- 15/00142 {Measuring mass flow rate}
- 15/00149 {Measuring volumetric flow rate}
- 15/00155 . . . {Measuring the level of material in a container or the position or shape of the upper surface of the material}
- 15/00162 . . . {Measuring pressure}
- 15/00168 . . . {Measuring speed of feeding material, e.g. bands or strips}
- 15/00175 . . . {Measuring temperature}
- 15/00181 {using infrared radiation thermometer or pyrometer, infrared sensors for temperature measurement without contact}
- 15/00188 . . . {Measuring volume}
- 15/00194 . . . {Measuring weight}
- 15/00201 . . {Measuring data of the driving system, e.g. torque, speed, power; Motor control}
- 15/00207 . . {Measuring properties of the mixtures, e.g. temperature, density, colour, vibration, noise ([B01F 15/00201 takes precedence](#))}
- 15/00214 . . . {Measuring colour or luminiscence}
- 15/0022 . . . {Measuring concentration, pH, pOH, p(ION), oxygen-demand ([B01F 15/00227 takes precedence](#))}
- 15/00227 . . . {Measuring electrical conductivity or dielectric constant of the mixture}
- 15/00233 . . . {Measuring density or solids or particle number}
- 15/0024 . . . {Measuring humidity, e.g. moisture content}
- 15/00246 . . . {Measuring viscosity}
- 15/00253 . . {Controlling the whole mixing process}
- 15/00259 . . {characterized by the means for measuring parameters}
- 15/00266 . . . {Measuring parameters of mixture or components to be mixed by means of wireless sensors introduced in the mixture, e.g. using transponders or RFID tags}
- 15/00272 . . . {using radiation for measuring parameters of mixture or components to be mixed}
- 15/00279 . . {characterized by the type of control technique used}
- 15/00285 . . . {Controlling the mixing process by feed-back, i.e. a measured parameter of the mixture is measured, compared with the set-value and the feed values are corrected}
- 15/00292 . . . {Controlling the mixing process by feed-forward, i.e. a parameter of the components to be mixed is measured and the feed values are calculated}
- 15/00298 . . . {Controlling the mixing process by fuzzy control, i.e. a prescribed fuzzy rule}
- 15/00305 . . . {Controlling the mixing process from a remote server, e.g. by sending commands using radio, telephone, internet, local network, GPS or other means}
- 15/00311 . . . {Use of stored recipes for controlling the computer programs, e.g. for manipulation, handling, production, composition in mixing plants ([B01F 13/1066 takes precedence](#))}
- 15/00318 . . . {Use of data, i.e. barcodes, 3D codes or similar type of tagging information, as instruction or identification codes for controlling the computer programs, e.g. for manipulation, handling, production, compounding in mixing plants ([B01F 13/1069 takes precedence](#))}
- 15/00324 . . . {Controlling using ultrasonic waves during the operation}
- 15/00331 . . {characterized by the parameter being controlled}
- 15/00337 . . . {Controlling the position of baffles used to modify the flow in a conduit or a container}

- 15/00344 . . . {Controlling the amount of delivered fluid during a period}
- 15/0035 . . . {Controlling the level of the material in the mixer}
- 15/00357 . . . {Controlling pressure}
- 15/00363 . . . {Controlling speed during the operation}
- 15/0037 {Controlling the speed of feeding of at least one component to be mixed}
- 15/00376 {Controlling the speed of the mixing device during the operation}
- 15/00383 {Controlling the linear speed of the tip of a moving stirrer during the operation}
- 15/00389 {Controlling the speed of rotation of the mixing axis, stirrer or receptacle during the operation}
- 15/00396 . . . {Controlling temperature}
- 15/00402 . . . {Controlling time, i.e. duration, of at least one parameter during the operation}
- 15/00409 {Controlling the duration of the mixing process or parts of it}
- 15/00415 {Controlling the time of feeding of at least one of the components to be mixed}
- 15/00422 . . . {Controlling the volume of at least one component to be mixed}
- 15/00428 . . . {Controlling the weight of at least one component to be mixed}
- 15/00435 . {Drives, e.g. for reciprocating motion; Transmissions; Brakes; Couplings ([B01F 15/00201](#), [B01F 15/00668](#) take precedence; drives using magnetic couplings [B01F 13/08](#))}
- 15/00441 . . {Construction of driving shafts}
- 15/00448 . . {for vertical stirrer shafts ([B01F 15/00461](#) takes precedence)}
- 15/00454 . . . {Driving several stirrer shafts, e.g. about the same axis}
- 15/00461 . . {Driving independent stirrer shafts, i.e. not fitted on the container}
- 15/00467 . . {Driving reciprocating or oscillating stirrers}
- 15/00474 . . {Electrical circuits therefor}
- 15/0048 . . {Couplings therefor, e.g. with torque sensing means ([couplings or clutches in general F16D](#); [measuring torque G01L 3/00](#))}
- 15/00487 . . {Nature of the drive}
- 15/00493 . . . {Driven by acoustic force, e.g. acoustically induced bubbles, acoustic windmill, acoustic scallop}
- 15/005 . . . {Flow driven}
- 15/00506 . . . {Hand driven}
- 15/00512 {Shaking by hand a portable receptacle or stirrer for mixing}
- 15/00519 . . . {Battery driven}
- 15/00525 . . . {Gas driven}
- 15/00532 . . . {Gravity driven, e.g. by means of weights out of balance, plunger-weights moving in a cylinder}
- 15/00538 . . . {Motor driven, i.e. by means of an electric or IC motor}
- 15/00545 . . . {Hydraulically driven}
- 15/00551 . . . {Driven by optical pressure force, e.g. produced by a laser beam}
- 15/00558 . . . {Driven by solar energy}
- 15/00564 . . . {Driven by the rotation of the wheels during movement}
- 15/00571 . . . {Wind driven}
- 2015/00577 . . . {Disposition of the drive}
- 2015/00584 . . . {independent from the receptacle}
- 2015/0059 . . . {mounted on the receptacle}
- 2015/00597 {at the lower side of the axis, e.g. driving the stirrer from the bottom of a receptacle}
- 2015/00603 {at the upper side of the axis, e.g. driving the stirrer from the top of a receptacle}
- 2015/0061 {the driving system comprising more than one motor, e.g. having an auxiliary motor or comprising independently driven elements}
- 2015/00616 {Driving the stirrer axis from both ends of the axis, i.e. using at least two motors per shaft}
- 2015/00623 . . . {Transmissions}
- 2015/00629 {the transmission alternately changes the speed of rotation}
- 2015/00636 {the transmission alternately changes the direction of rotation}
- 2015/00642 {the transmission or the motor can change the rotation sense, e.g. to mix or aerate, to move a fluid forward or backward, to suck or blow}
- 2015/00649 . . . {Couplings}
- 2015/00655 . . . {Brake mechanisms}
- 15/00662 . {Mounting or supporting mixing devices, e.g. independent stirrer units on receptacles; Mounting or supporting receptacles on frames or stands; Clamping or holding arrangements therefor}
- 15/00668 . . {Mounting or supporting stirrer shafts on receptacles}
- 15/00675 {by supporting only one extremity of the shaft}
- 15/00681 {at the top of the receptacle}
- 15/00688 {at the bottom of the receptacle, e.g. by studs}
- 15/00694 {at a side wall of the receptacle}
- 15/00701 {by supporting both extremities of the shaft}
- 15/00707 {at the top and at the bottom of the receptacle, e.g. for performing a conical orbital movement about a vertical axis}
- 15/00714 {at the side walls of the receptacle}
- 15/0072 {by means of clamps, clamping arrangements for fixing attached stirrers or independent stirrer units}
- 15/00727 {using inflatable arrangements for supporting a stirring element}
- 15/00733 . . {Clamping or holding arrangements for mounting receptacles on mixing devices, e.g. for shaking, vibrating or rotating the receptacle}
- 15/0074 {having a cup-shaped or cage-type form}
- 15/00746 {having a jaw-type or finger-type shape}
- 15/00753 {of the vertically movable, two-plates type}
- 2015/00759 {by means of an air cushion used for supporting the mixing receptacle}
- 15/00766 {Holding arrangements for retaining loose elements of the mixing receptacle, e.g. for holding the handle of a can while it is being shaken}
- 15/00772 . . {Supporting receptacles on frames or stands ([B01F 15/00733](#) takes precedence; frames of machines, stands as support for apparatus, in general [F16M](#))}
- 15/00779 . {Receptacle closures, covers or doors; Mechanisms for operating them}
- 15/00785 . . {by rotating them about an axis parallel to the plane of the opening}

- 15/00792 . . {by moving them in the plane of the opening
([B01F 15/00818](#) takes precedence)}
- 15/00798 . . . {by rotating them about an axis perpendicular
to the plane of the opening}
- 15/00805 . . {by moving them perpendicular to the plane of
the opening}
- 15/00811 . . . {and moving them afterwards in another
direction}
- 15/00818 . . {Moving covers on a cylindrical drum in a
circular path along the drum}
- 15/00824 . {Receptacles ([B01F 9/0032](#), [B01F 15/00779](#) take
precedence)}
- 15/00831 . . {Nature of the receptacle}
- 15/00837 . . . {provided with liners, e.g. wear resistant or
flexible liners}
- 15/00844 . . . {Surface characteristics, e.g. coated, rough}
- 15/0085 . . . {the mixing receptacle being flexible, e.g.
flexible bags supported by rigid containers}
- 15/00857 . . . {the mixing receptacle or conduit being
transparent or comprising transparent parts}
- 15/00863 . . {Multi compartment receptacles}
- 15/0087 . . . {comprising compartments keeping the
materials to be mixed separated until the
mixing is initiated ([B65D 81/32](#) takes
precedence)}
- 15/00876 . . {Configuration of the interior}
- 15/00883 . . . {provided with baffles, plates or bars on the
wall or the bottom}
- 15/00889 {with horizontal baffles mounted on the
walls}
- 15/00896 {with vertical baffles mounted on the walls}
- 15/00902 . . . {provided with guide tubes on the wall or the
bottom}
- 15/00909 . . {Closely surrounding the rotating element}
- 15/00915 . {Baffles; Flow breakers}
- 15/00922 . {Maintenance, e.g. replacing, repairing or
inspecting; Making mixers or parts thereof}
- 15/00928 . {General build-up of the mixers}
- 15/00935 . . {the mixer being built-up from a plurality of
modules or stacked plates comprising complete or
partial elements of the mixer}
- 15/00941 . . {the mixer or mixing elements being collapsible,
i.e. when discharging the products}
- 15/00948 . . . {the complete mixer being collapsible, i.e. the
housing can be collapsed}
- 15/00954 . {Preventing generation of dust or dirt; Sieves;
Filters ([B01F 15/00019](#), [B01F 15/00779](#) take
precedence)}
- 15/00961 . . {Preventing generation of dust}
- 15/00967 . . {using splash guards in mixers for avoiding dirt
or projection of material}
- 15/00974 . . {using filters in mixers, e.g. during venting}
- 15/0098 . . . {Filters for microliving organisms, i.e. filtering
of the mixture}
- 15/00987 . . {using sieves in mixers for purposes other than
mixing, e.g. eliminating dust during venting}
- 15/00993 . . {Venting, degassing, ventilating of gases, fumes
or toxic vapours during mixing}
- 15/02 . . Feed or discharge mechanisms
- 15/0201 . . {Feed mechanisms ([with proportioning](#)
[B01F 15/04](#))}
- 15/0202 . . . {for feeding a mixture of components, i.e.
solids in liquid, solids in a gas stream}
- 15/0203 . . . {for feeding fluids}
- 2015/0204 . . . {using screws, transporting belts or hoppers}
- 15/0205 . . . {comprising breaking packages or parts
thereof, e.g. piercing or opening sealing
elements between compartments or cartridges
([B65D 25/08](#), [B65D 81/32](#) take precedence)}
- 15/0206 {Breaking or perforating packages,
containers, vials}
- 15/0207 {the package containing one of the
components dissolves when in contact
with the other component of the mixture
([B65D 65/46](#) takes precedence)}
- 15/0208 {Opening clips which seal openings between
the compartments}
- 15/0209 {Dissolving the seal when in contact
with one of the products to be mixed,
thereby bringing the compartments in
communication}
- 15/021 {Opening the seal between the compartments
by application of heat}
- 15/0211 {Opening hooks which lock, close-off
openings between compartments}
- 15/0212 {Piercing, perforating, melting membranes,
closures which seal the compartments}
- 15/0213 {Opening valves which close-off openings
between compartments}
- 15/0215 {Removing separation walls, plugs which
close off the different compartments, e.g. by
rotation, axially sliding}
- 15/0216 . . . {for feeding predetermined amounts
([B01F 15/0441](#) takes precedence)}
- 15/0217 {using measuring chambers moving between
a loading and unloading position, e.g.
reciprocating feed frames}
- 15/0218 {rotating or oscillating about an axis}
- 15/0219 {the measuring chambers being pockets
on the circumference of a drum rotating
about a horizontal axis with discharging
by gravity}
- 15/022 {the measuring chambers being
channels extending between both front
faces of a rotating cylinder or disc}
- 2015/0221 . . . {Feeding the components in several steps, e.g.
successive steps}
- 15/0222 . . . {characterized by the relative arrangement
of the containers for feeding or mixing the
components}
- 15/0223 {the containers being connected coaxially
before contacting the contents}
- 15/0224 {A container being placed inside the other
before contacting the contents}
- 15/0225 {the containers being connected in a mouth-
to-mouth, end-to-end disposition, i.e. the
openings are juxtaposed before contacting
the contents}
- 15/0226 {the containers being placed in parallel
before contacting the contents}
- 15/0227 . . . {characterized by the means for feeding the
components to the mixer}
- 15/0229 {using belts}
- 15/023 {using boxes, closable containers, sacks,
carts}
- 15/0231 {using buckets, cups, open containers}
- 15/0232 {using capillary forces}
- 15/0233 {using centrifugal forces}

15/0234	. . . . {using gravity, e.g. from a hopper}	15/0277	. . . . {Discharging the components by overflow}
15/0235	. . . . {using a hopper}	15/0278	. . . . {using pistons or plungers}
15/0236	. . . . {using grippers}	15/0279	. . . . {reciprocating in the mixing receptacle}
15/0237	. . . . {using pistons, plungers, syringes}	15/028	. . . . {using pneumatic pressure, overpressure, gas pressure in a closed receptacle or circuit system}
15/0238	. . . . {using pneumatic pressure, overpressure, gas or air pressure in a closed receptacle or circuit system}	15/0281	. . . . {using means for discharging the mixture in a pulsating or intermittent manner}
15/0239	. . . . {using propellers}	15/0282	. . . . {using electrical pulses}
15/024	. . . . {using means for feeding components in a pulsating or intermittent manner}	15/0283	. . . . {using pumps}
15/0241	. . . . {using electrical pulses}	15/0284	. . . . {using venturi pumps}
15/0243	. . . . {using pumps}	15/0286	. . . . {using pushers}
15/0244	. . . . {membrane pumps}	15/0287	. . . . {using slides}
15/0245	. . . . {peristaltic pumps}	15/0288	. . . . {using a rotary discharge means, e.g. a screw beneath the receptacle (B01F 15/0267 takes precedence)}
15/0246	. . . . {piezoelectric pumps}	15/0289	. . . . {using helical screws}
15/0247	. . . . {piston pumps}	15/029	. . . . {using squeezing means on a deformable container}
15/0248	. . . . {venturi pumps}	15/0291	. . . . {using suction, vacuum, e.g. with a pipette}
15/0249	. . . . {using rakes, plain plates with raking movement}	15/0292	. . . . {using valves, gates, orifices, openings}
15/025	. . . . {using rollers}	15/0293	. . . . {being adjustable}
15/0251	. . . . {using helical screws}	15/0294	. . . . {using fans or ventilators}
15/0252	. . . . {using shovels, scoops}	15/0295	. . . . {using tilting or pivoting means for emptying the mixing receptacle}
15/0253	. . . . {using slides, vibrating tables}	15/0296	. . . . {the mixing receptacle rotating in opposite directions for mixing and for discharging}
15/0254	. . . . {using sprayers, nozzles, jets}	15/0297	. . . . {using distributing means, e.g. manifold valves, multiple fittings for supplying the discharge components to a plurality of dispensing places}
15/0255	. . . . {using ink jet heads or cartridges, e.g. of the thermal bubble jet or piezoelectric type}	15/0298	. . {Preventing lumping, or comminuting lumps, during feeding or discharging, e.g. by means of vibrations, or by scrapers}
15/0256	. . . . {Squeezing a flexible container}	15/04	. Forming a predetermined ratio of the substances to be mixed (controlling ratio of two or more flows of fluid or fluent material G05D 11/02 ; G05D 11/00 takes precedence))
15/0258	. . . . {using vacuum, underpressure in a closed receptacle or circuit system}	15/0404	. . {Forming mixtures with changing ratio or gradient}
15/0259	. . . . {using a syphon to create a suction of a component}	15/0408	. . {Adding a component to a mixture in response to a detected feature, e.g. density, radioactivity, consumed power, colour}
15/026	. . . . {using valves, gates, orifices, openings}	15/0412	. . {Forming a predetermined ratio of two or more flows, e.g. using flow-sensing or flow controlling devices (B01F 15/0408 takes precedence)}
15/0261	. . . . {being adjustable}	15/0416	. . . {using one or more pump or other dispensing mechanisms for feeding the flows in predetermined proportion, e.g. one of the pumps being driven by one of the flows (B01F 15/0425 takes precedence)}
15/0262	. . . . {using fans, turbines}	15/042	. . . . {with means for controlling the motor driving the pumps or the other dispensing mechanisms}
15/0263	. . . . {using vibrations, e.g. standing waves, ultrasonic vibrations}	15/0425	. . . {Flow control by weighing}
15/0264	. . . . {With means for feeding the material with a fractal or tree-type distribution in a surface}	15/0429	. . . {Flow control by valves, e.g. opening intermittently}
15/0265	. . . . {using means for feeding one phase surrounded by another phase without mixing during the feeding}	15/0433	. . . . {the flow of one component operating the actuator of the valve, e.g. by deforming a membrane which operates de valve actuator}
15/0266	. . {Discharge mechanism}		
15/0267	. . . {Discharging by opening a gate, e.g. using discharge paddles}		
15/0268	. . . . {the gate carrying a stirrer acting as discharge pump}		
2015/0269	. . . {using a rotary discharge means, e.g. a screw beneath the receptacle (B01F 15/0267 takes precedence)}		
15/027	. . . {with arrangements for converting the mechanism from mixing to discharging, e.g. by either guiding a mixture back into a receptacle or discharging it}		
15/0272	. . . {Discharging at the upper side of the receptacle, e.g. by pressurising the liquid in the receptacle or by centrifugal force}		
2015/0273	. . . {using a piston reciprocating in the mixing receptacle}		
15/0274	. . . {characterized by the means for discharging the components from the mixer}		
15/0275	. . . . {using belts}		
15/0276	. . . . {using gravity}		

- 15/0437 . . . {the flow of substances to be mixed circulating in a closed circuit, e.g. from a container through valve, driving means, metering means, dispensing means, e.g. 3-way valve, and back to the container}
- 15/0441 . . {by feeding the components in predetermined amounts}
- 15/0445 . . . {by weighing, e.g. with automatic discharge}
- 15/045 {the weighing being effected by material receiving containers rotating or tilting under the influence of the weight of the material in those containers}
- 15/0454 . . . {using measuring chambers, e.g. volumetric pumps, for feeding the substances (for amalgam mixers [A61C 5/60](#); specially adapted for mixing plastic material [B29B 7/242](#), [B29B 7/603](#), [B29B 7/7626](#); feeding plastic material in general [B29C 31/06](#), [B29C 31/10](#); for presses [B30B 15/302](#), [B30B 15/304](#); pumps for delivering fixed or variable measured quantities of two or more fluids at the same time [F04B 13/02](#); measuring and separating a predetermined volume of fluid or fluent solid material [G01F 11/00](#))}
- 15/0458 {involving controlling}
- 15/0462 {using measuring chambers of the piston or plunger type ([B01F 15/0475](#) takes precedence)}
- 15/0466 {with double acting pistons ([B01F 15/047](#) takes precedence)}
- 15/047 {without external means for driving the piston, e.g. the piston being driven by one of the components}
- 15/0475 {using diaphragms or bellows}
- 15/0479 . . . {using flow rate controls for feeding the substances}
- 15/0483 . . {for solid materials, e.g. using belts, vibrations, hoppers with variable outlets or hoppers with rotating elements, e.g. screws, at their outlet ([B01F 15/0408](#) - [B01F 15/0441](#) take precedence)}
- 15/0487 . . . {the material after falling on a, e.g. rotatable, plate being wiped from this plate by means of a scraper}
- 15/0491 . . {Measuring receptacles therefor}
- 15/0495 . . {characterised by the build-up of the device}
- 15/06 . Heating or cooling systems
- 2015/061 . . {Cooling}
- 2015/062 . . {Heating}
- 15/063 . . {using gas or liquid injected into the material, e.g. using liquefied CO₂ or steam}
- 15/065 . . {using heating or cooling elements at the outside of the receptacle, e.g. heated jackets, burners, spraying devices}
- 15/066 . . {using heating or cooling elements inside the receptacle}
- 15/067 . . {using radiation or high frequency energy, e.g. microwaves or electromagnetic radiation}
- 15/068 . . {using heated or cooled stirrers}

17/00

Use of substances as emulsifying, wetting, dispersing or foam-producing agents {(see for particular applications relevant classes, e.g. lubricant emulsions [C10M](#); fuel emulsions [C10L 1/32](#); detergents [C11D](#); colour and dye dispersions [C09](#); textile applications [D06](#); cosmetics [A61K](#); food [A23L 29/10](#); biocides [A01N](#); petrol winning [E21B](#); hydrometallurgy, metal liquid-liquid extraction [C22B](#); mixers [B01F 3/00](#); polymers mixing; waxes [C08](#); paper [D21H](#); demulsification (anti foam) [B01D 19/04](#))}

NOTE

A compound is always classified in the last appropriate place

- 17/0007 . {Inorganic compounds}
- 17/0014 . {Organic compounds containing only carbon and hydrogen}
- 17/0021 . {Organic compounds containing oxygen}
- 17/0028 . . {Macromolecular compounds}
- 17/0035 . {Organic compounds containing halogen}
- 17/0042 . {Organic compounds containing nitrogen}
- 17/005 . . {Macromolecular compounds}
- 17/0057 . {Organic compounds containing sulfur, selenium, or tellurium}
- 17/0064 . {Organic compounds containing phosphorus}
- 17/0071 . {Organic compounds containing silicon}
- 17/0078 . {Organic compounds not provided for in groups [B01F 17/0014](#) - [B01F 17/0071](#)}
- 17/0085 . {Mixtures of compounds}
- 17/0092 . . {Mixtures of 2 or more different organic oxygen-containing compounds}

2201/00 Dissolving gases

- 2201/01 . To-be-deleted with administrative transfer to parent group

2215/00 Auxiliary or complementary information in relation with mixing

- 2215/0001 . Field of application of the mixing device
- 2215/0003 . . Mixing or agitating manure, dung ([storage of manure with mixing or agitation devices](#) [A01C 3/026](#))
- 2215/0004 . . Mixing or agitating during harvesting or moving, e.g. mixing with solid harvested products or particles ([harvesting or mowing](#) [A01D](#))
- 2215/0006 . . Mixing or aerating milk or cream ingredients ([ice-cream](#) [B01F 2215/0021](#); [homogenising milk](#) [A01J 11/16](#))
- 2215/0008 . . Mixing cattle, poultry, stock or game food, possibly combined with distribution ([fodder distributors with mixer or shredder](#) [A01K 5/001](#))
- 2215/0009 . . Mixing biocide, pesticide, herbicide, ingredients used, e.g. for spraying, in agriculture, horticulture ([liquid spraying apparatus for catching or trapping animals](#) [A01M 7/00](#))
- 2215/0011 . . Mixing dough
- 2215/0013 . . Mixing cereals, grains, seeds materials ([treatment of foods](#) [A23](#))
- 2215/0014 . . Mixing food ingredients ([treatment of foods](#) [A23](#))
- 2215/0016 . . Mixing butter, margarine ingredients ([treatment of dairy products](#) [A23C](#))

- 2215/0018 . . Mixing cheese ingredients ([treatment of dairy products A23C](#))
- 2215/0019 . . Mixing chocolate ingredients ([mixing of cocoa or cocoa products A23G 1/0026](#))
- 2215/0021 . . Mixing ice-cream ingredients ([milk or cream B01F 2215/0006](#); [production of ice-cream A23G 9/04](#))
- 2215/0022 . . Mixing beverage ingredients for non-alcoholic beverages; Dissolving sugar in water ([preparation or treatment of foodstuffs A23L](#))
- 2215/0024 . . Mixing animal food ingredients ([B01F 2215/0008 takes precedence](#); [apparatus for preparing animal feeding-stuffs A23N 17/00](#))
- 2215/0026 . . Kitchen, household equipment for mixing ([mixing equipment for kitchen and household, kitchen equipment A47J](#))
- 2215/0027 . . Mixing dentistry compositions ([dentistry A61C](#))
- 2215/0029 . . Mixing ingredients for bone cement ([equipment for handling bone cement A61B 17/8802](#))
- 2215/0031 . . Mixing ingredients for cosmetic, perfume compositions ([mixtures with detergents for washing machines B01F 2215/0077](#); [cosmetics or toilet preparations A61K 8/00](#))
- 2215/0032 . . Mixing ingredients for pharmaceutical, homeopathical compositions
- 2215/0034 . . Mixing compositions and mixers in the medical or veterinary field ([preparation of medical media for introduction into, or onto, the body A61M](#))
- 2215/0036 . . Mixing chemical components in general, chemical components in order to improve chemical treatment, reactions, independently from the specific application
- 2215/0037 . . Mixers used as laboratory equipment, e.g. for analyzing, testing and investigating chemical, physical or biological properties of materials ([laboratory equipment B01L](#), [investigating or analyzing materials in general G01N](#))
- 2215/0039 . . Mixers of the two-component package type, i.e. where at least two components are separately stored, and are mixed in the moment of application ([tools for applying liquids or other fluent materials to surfaces B05C 17/00](#))
- 2215/004 . . Mixing ingredients for cleaning compositions, during cleaning operations ([cleaning in general B08B](#))
- 2215/0042 . . Mixing waste with other ingredients ([disposal of solid waste B09](#))
- 2215/0044 . . Mixing ingredients for casting metals ([mixing in metallurgical processes in general B01F 2215/0075](#); [casting of metals B22D](#))
- 2215/0045 . . Mixing ingredients for grinding, polishing, lapping ([grinding, polishing B24](#))
- 2215/0047 . . Mixing cement, mortars, clay, plaster or concrete ingredients
- 2215/0049 . . Mixing plastics, polymer material ingredients, monomers or oligomers ([hot melt adhesives see B01F 2215/0062](#))
- 2215/005 . . Mixing paints, paint ingredients, e.g. pigments, dyes, colours, lacquer-, enamel ingredients ([implements for stirring or mixing paints B44D 3/06](#))
- 2215/0052 . . Treatment of water, waste water or sewage ([treatment of water, waste water, sewage or sludge C02F](#))
- 2215/0054 . . Mixing compost ingredients or organic waste for preparing fertilizers ([organic fertilizers C05F](#))
- 2215/0055 . . Mixing fertilizer ingredients from other sources than compost or organic waste ([fertilizers C05](#))
- 2215/0057 . . Mixing fuel and prill, i.e. water or other fluids mixed with explosive solid, to obtain liquid explosive fuel emulsions or slurries ([mixing fuel and propellant B01F 2215/0086](#); [mixing fuel and water B01F 2215/0088](#); [working-up explosives C06B 21/00](#))
- 2215/0059 . . Mixing inks, toner ([ink agitators B41F 31/03](#); [inks C09D 11/00](#))
- 2215/006 . . Mixing adhesives ingredients; glues; adhesive and gas ([mixing ingredients of hot-melt adhesives B01F 2215/0062](#); [adhesives C09J](#))
- 2215/0062 . . Mixing ingredients of hot-melt adhesives; hot-melt adhesive and gas ([adhesives C09J](#))
- 2215/0063 . . Mixing asphalt, bitumen, tar or pitch or their ingredients ([working-up pitch, asphalt, bitumen C10C](#))
- 2215/0065 . . Mixing ingredients for grease, lubricating compositions ([lubricating compositions C10M](#))
- 2215/0067 . . Mixing ingredients for oils, fats or waxes ([producing, refining and preserving fats, fatty substances, waxes C11B](#))
- 2215/0068 . . Mixing beer or the ingredients therefore ([brewing of beer C12C](#))
- 2215/007 . . Mixing wine or other alcoholic beverages; Mixing the ingredients therefore ([wine aeration prior to consumption B01F 2215/0072](#); [wine, other alcoholic beverages C12G](#))
- 2215/0072 . . Aeration of wine prior to consumption ([wine, other alcoholic beverages C12G](#))
- 2215/0073 . . Mixing ingredients for microbiology, enzymology, *in vitro* culture, genetic manipulation ([apparatus for microbiology or enzymology C12M](#))
- 2215/0075 . . Mixing in metallurgical processes of ferrous or non ferrous materials ([for casting metal B01F 2215/0044](#); [metallurgy of iron C21](#); [metallurgy C22](#))
- 2215/0077 . . Mixing ingredients comprising detergents, soaps, for washing, e.g. washing machines ([laundering, drying of textile articles D06F](#))
- 2215/0078 . . Mixing ingredients for paper pulp, e.g. wood fibres, wood pulp ([paper making, production of cellulose D21](#))
- 2215/008 . . Mixing water with other ingredients, e.g. air, detergents, disinfectants, in water-taps ([domestic plumbing installations E03C](#))
- 2215/0081 . . Mixing ingredients for well-, earth-, deep drilling compositions or drilled material with liquids to obtain slurries ([compositions for drilling C09K 8/00](#); [earth drilling E21B](#))
- 2215/0083 . . Mixing mined ingredients and liquid to obtain slurries ([mining or quarrying E21C](#))
- 2215/0085 . . Mixing combustion ingredients, e.g. gases, for burners or combustion chambers ([feeding or distributing fuel to combustion apparatus F23K 5/00](#))
- 2215/0086 . . Mixing fuel or propellant and water or gas, e.g. air, or other fluids, e.g. liquid additives to obtain fluid fuel ([mixing fuel and prill B01F 2215/0057](#); [feeding or distributing fuel to combustion apparatus F23K 5/00](#))

B01F

- 2215/0088 . . Mixing fuel and water or other fluids to obtain liquid fuel emulsions ([mixing fuel and prill B01F 2215/0057](#); [feeding or distributing fuel to combustion apparatus F23K 5/00](#))
- 2215/009 . . Aromatizing, smell generation, sense simulation by introducing liquid in gas or air
- 2215/0091 . . Introducing liquid in air for air humidification
- 2215/0093 . . Mixing photosensitive chemicals, photographic base materials ([photosensitive materials for photographic purposes G03C](#))
- 2215/0095 . . Mixing nuclear, radioactive materials ([nuclear physics and engineering G21](#))
- 2215/0096 . . Mixing during semiconductor or wafer manufacturing processes ([semiconductor devices H01L](#))
- 2215/0098 . . Mixing reaction ingredients for fuel cells ([fuel cells H01M 8/00](#))
- 2215/04 . . Technical information in relation with mixing
- 2215/0404 . . theories or general explanations of phenomena associated with mixing or generalizations of a concept by comparison of equivalent methods
- 2215/0409 . . Relationships between different variables defining features or parameters of the apparatus or process
- 2215/0413 . . Numerical information
- 2215/0418 . . . Geometrical information
- 2215/0422 Numerical values of angles
- 2215/0427 Numerical distance values, e.g. separation, position
- 2215/0431 Numerical size values, e.g. diameter of a hole or conduit, area, volume, length, width, or ratios thereof
- 2215/0436 . . . Operational information
- 2215/044 Numerical composition values of components or mixtures, e.g. percentage of components
- 2215/0445 Numerical electrical values, e.g. intensity, voltage
- 2215/045 Numerical flow-rate values
- 2215/0454 Numerical frequency values
- 2215/0459 Numerical values of dimensionless numbers, i.e. Re, Pr, Nu, transfer coefficients
- 2215/0463 Numerical power values
- 2215/0468 Numerical pressure values
- 2215/0472 Numerical temperature values
- 2215/0477 Numerical time values
- 2215/0481 Numerical speed values
- 2215/0486 . . . Material property information
- 2215/049 Numerical values of density of substances
- 2215/0495 Numerical values of viscosity of substances