

CPC**COOPERATIVE PATENT CLASSIFICATION****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

1.The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following groups:

[B01F 17/02](#) to [B01F 17/56](#) covered by [B01F 17/00](#) to [B01F 17/0092](#)

B01F 1/00

Dissolving ({ without involving chemical reactions; [B01F 3/04099](#) takes precedence; } separating by dissolving [B01D](#) ; dissolving to effect cooling [F25D 5/00](#))

B01F 1/0005

. { Methods }

B01F 1/0011

. { using driven stirrers }

B01F 1/0016

. { comprising constructions for blocking or redispersing undissolved solids, e.g. sieves, separators, guiding constructions ([B01F 1/0033](#) takes precedence) }

B01F 1/0022

. { using flow mixing }

B01F 1/0027

.. { using additional holders in conduits, containers or pools for keeping the solid material in place, e.g. supports, receptacles }

B01F 1/0033

... { comprising constructions for blocking or redispersing undissolved solids }

B01F 1/0038

. { Dissolving systems, i.e.flow charts or diagrams; Arrangements, e.g. comprising controlling means }

B01F 3/00

Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed { ([C08J 3/02](#) takes precedence) }

B01F 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](#)) }

B01F 3/02

. gases with gases or vapours { (for preparing respiratory gases or vapours [A61M 16/12](#)) }

B01F 3/022

.. { with vaporisation of a liquid }

B01F 3/024

.. { with moving mixing elements, e.g. with liquid seal ([B01F 3/022](#) takes precedence) }

- B01F 3/026 .. { Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means }
- B01F 3/028 ... { characterised by the construction of the controlling means }
- B01F 3/04 . { gases or vapours with liquids (mixing non-alcoholic beverages with gases [A23L 2/54](#); { for medical purposes [A61M 16/14](#) }) [M1110] }
- B01F 3/04007 .. { Introducing a liquid into a gaseous medium, e.g. preparation of aerosols (for air-conditioning [F24F 6/00](#)) }
- B01F 3/04014 ... { Methods }
- B01F 3/04021 ... { by spraying or atomising of the liquid (apparatus for spraying or atomising per se [B05B](#) ; evaporating by spraying [B01D 1/16](#)) }
- B01F 3/04028 { using rotating elements, e.g. rolls, brushes }
- B01F 3/04035 { for spraying the liquid radially by centrifugal force }
- B01F 3/04042 { with additional rotating elements mounted on the same axis, e.g. fans, for moving the gas }
- B01F 3/04049 { using nozzles }
- B01F 3/04056 { High pressure atomization, i.e. the liquid is atomized and sprayed by a jet at high pressure }
- B01F 3/04063 { Internal mixer atomization, i.e. liquid and gas are mixed and atomized in a jet nozzle before spraying }
- B01F 3/0407 { using electric, sonic or ultrasonic energy }
- B01F 3/04078 ... { using a gas-liquid mixing column or tower (absorbing units for separating gases or vapours [B01D 53/18](#)) }
- B01F 3/04085 ... { by forcing the gas through absorbent pads containing the liquid }
- B01F 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 1/02B](#), [B67D 1/04A](#), [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](#)) }
- B01F 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](#)) }
- B01F 3/04113 { Arrangement or manipulation of the gas bubbling devices }
- B01F 3/0412 { Mounting the bubbling devices or the diffusers ([B01F 3/04241](#) takes precedence) }
- B01F 3/04241 { Diffusers }
- B01F 3/04248 { having injection means, e.g. nozzles with circumferential outlet }
- B01F 3/04255 { having elements opening under air pressure, e.g. valves }
- B01F 3/04262 { consisting of rigid porous or perforated material }
- B01F 3/04269 { consisting of flexible porous or perforated material, e.g. fabric }
- B01F 3/04439 ... { Methods }
- B01F 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](#)) }

B01F 3/04453	....	{ using driven stirrers }
B01F 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) }
B01F 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) }
B01F 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) }
B01F 3/04482	.....	{ the liquid film or layer flowing over a horizontal or inclined surface, e.g. perforated }
B01F 3/04489	.....	{ the liquid film or layer flowing over a vertical surface, e.g. a mesh }
B01F 3/04496	....	{ using columns, e.g. multistaged columns }
B01F 3/04503	....	{ by circulating the flow in guiding constructions or conduits }
B01F 3/0451	.....	{ being at least partially immersed in the liquid, e.g. in a closed circuit (B01F 3/04602 takes precedence) }
B01F 3/04517	.....	{ The conduits being vertical draft pipes with a lower intake end and an upper exit end }
B01F 3/04524	.....	{ the guiding constructions being baffles for guiding the flow up-and-down or from left-to-right }
B01F 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) }
B01F 3/04539	....	characterised by the introduction of the gas along the axis of the stirrer or along the stirrer elements
B01F 3/04588	....	{ the stirrer rotating about a horizontal axis; Stirrers therefor }
B01F 3/04595	....	{ Single stirrer-drive aerating units, e.g. with the stirrer-head pivoting around an horizontal axis }
B01F 3/04602	....	{ provided with stationary guiding means surrounding at least partially the stirrer }
B01F 3/04609	.....	{ with tubes surrounding the stirrer }
B01F 3/04617	.....	{ the stirrer being of the centrifugal type, e.g. with a surrounding stator }
B01F 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) }
B01F 3/04737	....	{ by cascading, spraying or projecting a liquid into a gaseous atmosphere (B01F 3/04765 takes precedence) }
B01F 3/04744	.....	{ Surface aerating by cascading the liquid }
B01F 3/04751	.....	{ Surface aerating using liquid falling from orifices in a gaseous atmosphere, the orifices being exits from perforations, tubes, chimneys }
B01F 3/04758	.....	{ Surface aerating using nozzles for projecting the liquid as a jet }
B01F 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 }
B01F 3/04773	.....	{ the stirrers rotating about a vertical axis }
B01F 3/0478	.....	{ Stirrers therefor }
B01F 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](#)) }
- B01F 3/04794 { for aerating or carbonating beverages within containers, e.g. bottles }
- B01F 3/04801 { Portable appliances comprising a gas cartridge }
- B01F 3/04808 { for aerating or carbonating within receptacles or tanks, e.g. distribution machines ([B01F 3/04794](#) takes precedence) }
- B01F 3/04815 { Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means }
- B01F 3/04829 . . . { Parts; Accessories }
- B01F 3/04836 Mixing receptacles, e.g. tanks, vessels, reactors, being completely closed, e.g. hermetically closed
- B01F 3/04978 . . . { using vibrations, electrical or magnetical energy, radiations }
- B01F 3/04985 . . { Mixing systems, i.e. flow charts or diagrams }
- B01F 3/04992 . . . { for obtaining foams or aerosols }
- B01F 3/06 . gases or vapours with solids
- B01F 3/068 . . { Mixing systems, i.e. flow charts or diagrams }
- B01F 3/08 . liquids with liquids; Emulsifying { ([B01F 13/0222](#) takes precedence; dispensing beverages on draught combined with mixing [B67D 1/00F](#), [B67D 1/0043](#)) }
- B01F 3/0803 . . { Methods ([3/08C1](#) takes precedence) }
- B01F 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](#)) }
- B01F 3/0811 . . . { Methods }
- B01F 3/0815 . . . { using heat, vibrations, electrical or magnetical energy }
- B01F 3/0819 { using vibrations }
- B01F 3/0853 . . { Mixing liquids using driven stirrers }
- B01F 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 }
- B01F 3/0861 . . { Mixing liquids using flow mixing }
- B01F 3/0865 . . . { by injecting or introducing one liquid into another }
- B01F 3/0869 . . . { by uniting flows taken from different parts of a receptacle or silo; Sandglass-type mixing (for particulate material [B01F 5/24](#)) }
- B01F 3/0873 . . . { by moving the liquids in countercurrent }
- B01F 3/0876 . . . { by injecting a mixture of liquid and gas }
- B01F 3/088 . . { Mixing systems, i.e. flow charts or diagrams }
- B01F 3/10 . . Mixing very viscous liquids
- B01F 3/12 . liquids with solids ({ [B01F 1/00](#) takes precedence; } displacing one liquid by another in dispersions of solids in liquids [B01D 12/00](#)) }
- B01F 3/1207 . . { Methods ([3/12C](#) takes precedence; process features in the making of dispersions of dyestuffs preparations [C09B 67/0091](#)) }
- B01F 3/1214 . . . { characterised by the composition of the liquids or solids }
- B01F 3/1221 . . { using driven stirrers }
- B01F 3/1228 . . { Wetting solids ([B01F 5/18](#) takes precedence) }
- B01F 3/1235 . . { the mixture being submitted to electrical, sonic or similar energy }

- B01F 3/1242 . . . { using vibrations }
- B01F 3/1271 . . { Mixing systems, i.e. flow charts or diagrams }
- B01F 3/14 . . Mixing very viscous liquids with solids

- B01F 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](#)) }
- B01F 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 }
- B01F 3/184 . . { using rotatable mixing elements at the lower end of discharge hoppers }
- B01F 3/186 . . { by evaporating or liquefying at least one of the components; using a fluid which is evaporated after mixing }
- B01F 3/188 . . { Mixing systems, i.e. flow charts or diagrams; Arrangements, e.g. comprising controlling means }

- B01F 3/20 . Pretreatment of the materials to be mixed { ([B28C 5/404](#), [B29B 7/905](#) take precedence) }
- B01F 3/2007 . . { Coating solid components }
- B01F 3/2014 . . { Cooling components }
- B01F 3/2021 . . { Degassing, deaerating components; replacing one gas within the components by another gas }
- B01F 3/2028 . . { Drying components, e.g. in order to mix them in solid state }
- B01F 3/2035 . . { Submitting components to electrical energy fields to charge or ionize them }
- B01F 3/2042 . . { Evaporating solvents, dispersion liquid, e.g. water, at least partially }
- B01F 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 }
- B01F 3/2057 . . { Filtering components }
- B01F 3/2064 . . { Freezing components, e.g. to mix them in solid state }
- B01F 3/2071 . . { Grinding components }
- B01F 3/2078 . . { Heating components, e.g. melting }
- B01F 3/2085 . . { Irradiating components }
- B01F 3/2092 . . { Sieving components }

- B01F 3/22 . Aftertreatment of the mixture
- B01F 3/2207 . . { Coating the solid mixture }
- B01F 3/2215 . . { Cooling the mixture }
- B01F 3/2223 . . { Venting, degassing, ventilating of gases, fumes or toxic vapours from the mixture }
- B01F 3/223 . . { Drying the mixture }
- B01F 3/2238 . . { Submitting a mixture to electrical energy fields, e.g. corona discharge }
- B01F 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 }
- B01F 3/2253 . . { Extracting components from the mixture, e.g. by adsorption, absorption, distillation }
- B01F 3/2261 . . { Filtering the mixture }
- B01F 3/2269 . . { Freezing the mixture }
- B01F 3/2276 . . { Grinding the mixture }

- B01F 3/2284 .. { Heating the mixture }
- B01F 3/2292 .. { Irradiating the mixture }

Guidance heading: Mixers

B01F 5/00 **Flow mixers ([sprayers](#), [atomisers B05B](#)); Mixers for falling materials, e.g. solid particles ([B01F 13/04](#) takes precedence; [centrifugal mixers B04](#))**

- B01F 5/0057 . { Mixing by creating a vortex flow, e.g. by tangentially introducing jets ([apparatus using free vortex flow in general B04C](#)) }
- B01F 5/006 .. { wherein the vortex flows in a spherical shaped receptacle or chamber }
- B01F 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 }
- B01F 5/0065 .. { with additional mixing means other than vortex mixers, e.g. the vortex chamber being positioned in another mixing chamber }
- B01F 5/0068 .. { Characterised by the arrangement of the discharge opening }
- B01F 5/0071 ... { the mixing chamber being vertical with the outlet tube at its upper side }
- B01F 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 }
- B01F 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](#)) }
- B01F 5/008 .. { of the mixing valve type }
- B01F 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) }
- B01F 5/0085 . { Mixing drops, droplets, bodies of liquid which flow together or contact each other ([B01F 13/0069](#) takes precedence) }
- B01F 5/02 . Jet mixers { ([B01F 5/0057](#) take precedence; with gas agitation, i.e. for fluidisation [B01F 13/02](#)) }
- B01F 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](#)) }
- B01F 5/0212 ... { the injectors being surrounded by guiding tubes }
- B01F 5/0218 ... { the injectors being movable, e.g. rotating }
- B01F 5/0225 { Pivoting, oscillating in a multidirectional way during jetting }
- B01F 5/0231 { Rotating during jetting }
- B01F 5/0237 { being vertically moved to bring the injector in or out of operative position }
- B01F 5/0243 { being moved or transported between different locations during jetting }
- B01F 5/025 { Moving to adjust the direction of jetting, the injectors being fixed during operation }
- B01F 5/0256 .. { Mixing by intersecting jets ([in a stream-impingement mixing head for polymers B29B 7/76](#)) }

- B01F 5/0262 . . . { the intersecting jets having the configuration of sheets, cylinders or cones }
- B01F 5/0268 . . { Mixing by jets impinging against a collision plate }
- B01F 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](#)) }
- B01F 5/0281 . . { characterized by the specific design of the jet injector }
- B01F 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 }
- B01F 5/0293 . . . { the jet injector being of coanda type, i.e. having a surface to attract the jet for adjusting its direction }
- B01F 5/04 . . Injector mixers, { i.e. one or more components being added to a flowing main component ([B01F 5/0057](#) takes precedence) }
- B01F 5/0401 . . { the additional component being axially fed and radially discharged through a circumferential outlet }
- B01F 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](#)) }
- B01F 5/0405 . . . { for mixing more than two components; Devices specially adapted for generating foam, e.g. air foam }
- B01F 5/0406 { Devices specially adapted for generating foam }
- B01F 5/0408 { with additional mixing means other than injector mixers, e.g. screen, baffles ([B01F 5/041](#) takes precedence) }
- B01F 5/041 { with rotating elements, e.g. driven by one of the components for feeding or by the resulting mixture for additional mixing }
- B01F 5/0411 { with means for introducing an additional component, e.g. in predetermined proportion, in the main component }
- B01F 5/0413 . . . { provided with a venturi element }
- B01F 5/0415 { with additional mixing means other than injector mixers, e.g. screens, baffles or rotating elements }
- B01F 5/0416 { the material flowing at a supersonic velocity thereby creating shock waves }
- B01F 5/0418 { with two or more venturi elements }
- B01F 5/042 { used alternatively }
- B01F 5/0421 { used simultaneously }
- B01F 5/0423 { used successively }
- B01F 5/0425 { characterized by the place of introduction of the main flow }
- B01F 5/0426 { the main flow being injected in the circumferential area of the venturi, creating an aspiration in the central part of the conduit }
- B01F 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) }
- B01F 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 }
- B01F 5/045 . . . { the additional component being introduced in the centre of the conduit }
- B01F 5/0451 { with additional mixing means other than injector mixers, e.g. screens, baffles or rotating elements }
- B01F 5/0453 { by using two or more injector devices }

B01F 5/0455	.....	{ used alternatively }
B01F 5/0456	.....	{ used simultaneously }
B01F 5/0458	.....	{ used successively }
B01F 5/046	.....	{ arranged concentrically }
B01F 5/0461	....	{ characterized by the specific design of the injector }
B01F 5/0463	.....	{ Perforated, multi-opening, with a plurality of holes }
B01F 5/0465	.....	{ Porous injectors }
B01F 5/0466	.....	{ Ring, torus, toroidal or coiled configurations }
B01F 5/0468	.....	{ Rotatable injectors }
B01F 5/047	.....	{ the opening for introducing the supplementary stream being a slit }
B01F 5/0471	...	{ the additional component being introduced at the circumference of the conduit }
B01F 5/0473	....	{ with additional mixing means other than injector mixers }
B01F 5/0475	....	{ the conduit having a plurality of openings in the axial direction or in the circumferential direction }
B01F 5/0476	.....	{ the conduit being porous }
B01F 5/0478	.....	{ with a plurality of perforations in the axial direction only }
B01F 5/048	.....	{ with a plurality of perforations in the circumferential direction only and covering the whole circumference }
B01F 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 }
B01F 5/0483	.....	{ with a plurality of perforations aligned in a row perpendicular to the flow direction }
B01F 5/0485	.....	{ with a plurality of perforations in the axial and circumferential direction covering the whole surface }
B01F 5/0486	....	{ characterized by the specific design of the injector }
B01F 5/0488	.....	{ A slit extending in the longitudinal direction only }
B01F 5/049	.....	{ A slit extending in the circumferential direction only }
B01F 5/0491	.....	{ Rotatable, e.g. placed on a rotatable housing or conduit }
B01F 5/0493	.....	{ A bundle of similar tubes, each of them having feedings on the circumferential wall, e.g. as mixer for a reactor }
B01F 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) }
B01F 5/0496	...	{ having a container for the additional component fixed to the conduit }
B01F 5/0498	..	{ the additional component being added in a by-pass of the main flow (B01F 5/0496 , B01F 5/106 take precedence) }
B01F 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)
B01F 5/0601	..	{ Fractal mixers }
B01F 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) }

B01F 5/0603	...	{ the mixture or the components moving in an irregular path, e.g. radially (B01F 5/0646 takes precedence) }
B01F 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 }
B01F 5/0605	....	{ by means of elements placed in the receptacle for moving or guiding the components }
B01F 5/0606	.....	{ using baffles }
B01F 5/0607	.....	{ using dams }
B01F 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 }
B01F 5/0609	...	{ Mixing tubes, e.g. the material being submitted to a substantially radial movement or to a movement partially in reverse direction }
B01F 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) }
B01F 5/0611	.....	{ the baffles being adjustable }
B01F 5/0612	.....	{ having different kinds of baffles, e.g. plates alternating with screens }
B01F 5/0613	.....	{ comprising a plurality of stacked ducts having their axes parallel to the tube axis }
B01F 5/0614	.....	{ the baffles being helical elements }
B01F 5/0615	.....	{ composed of consecutive sections of helical formed elements }
B01F 5/0616	.....	{ the baffles being made by deforming flat pieces of material, e.g. by bonding , folding, deep drawing (B01F 5/0614 takes precedence) }
B01F 5/0617	.....	{ composed of consecutive sections of deformed flat pieces of material }
B01F 5/0618	.....	{ the baffles being flat pieces of material, e.g. intermeshing, fixed to the wall, fixed on a central rod }
B01F 5/0619	.....	{ composed of consecutive sections of flat pieces of material }
B01F 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) }
B01F 5/0641	.....	{ the subflows consisting of at least two flat layers which are recombined, e.g. using means having restriction or expansion zones }
B01F 5/0642	.....	{ using a simple by-pass for separating and recombining the flow, e.g. by using branches of different length }
B01F 5/0643	.....	{ essentially composed of stacks of sheets, e.g. corrugated sheets }
B01F 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 }
B01F 5/0645	.....	{ the channels or tubes crossing each other several times }
B01F 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) }
B01F 5/0647	.....	{ Mixers with bended, curved, coiled, wounded mixing tubes or comprising elements for bending the flow }
B01F 5/0648	.....	{ Mixers with a strong change of direction in the conduit for

		homogenizing the flow }
B01F 5/065	.....	{ Mixers with scallop-shaped tubes or surfaces facing each other }
B01F 5/0651	.....	{ Mixers with a converging cross-section }
B01F 5/0652	.....	{ Mixers with a converging-diverging cross-section }
B01F 5/0653	.....	{ Mixers with a diverging cross-section }
B01F 5/0654	.....	{ Mixers with a diverging-converging cross-section }
B01F 5/0655	.....	{ Mixers with a succession of converging-diverging cross-sections, i.e. undulating cross-section }
B01F 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) }
B01F 5/0657	.....	{ the insert being provided with helical grooves }
B01F 5/0658	.....	{ the insert being provided with a labyrinth of grooves or a distribution of protrusions }
B01F 5/0659	....	{ Mixing tubes composed of concentric tubular members (pressing the components through tubular members provided with orifices B01F 5/0682) }
B01F 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) }
B01F 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) }
B01F 5/0662	...	{ characterized by the configuration of the surfaces forming the slits }
B01F 5/0663	....	{ the slits being formed between opposed planar surfaces, e.g. pushed again each other by springs }
B01F 5/0664	.....	{ with a plurality of parallel slits, e.g. formed between stacked plates }
B01F 5/0665	....	{ the slits being formed between opposed conical or cylindrical surfaces }
B01F 5/0666	....	{ the slits being formed between the balls and the seats of a bearing-like construction }
B01F 5/0667	....	{ the slits being formed between the helical windings of a spring-like construction or by deforming a spring }
B01F 5/0668	....	{ the opposed surfaces being provided with grooves }
B01F 5/0669	.....	{ Axial grooves formed on opposed surfaces, e.g. on cylinders or cones }
B01F 5/067	.....	{ Circumferential grooves formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones }
B01F 5/0671	.....	{ Helical grooves formed on opposed surfaces, e.g. on cylinders or cones }
B01F 5/0672	.....	{ Crossing sets of grooves forming a labyrinth formed on opposed surfaces, e.g. on planar surfaces or on cylinders or cones }
B01F 5/0673	.....	{ Radial grooves formed on opposed surfaces, e.g. on planar surfaces }
B01F 5/0675	.....	{ Spiral grooves formed on opposed surfaces, e.g. on planar surfaces }
B01F 5/0676	.....	{ the grooves being formed on the outer surface of the cylindrical or conical core of the slits }
B01F 5/0677	.....	{ the grooves being formed on the inner surface of the cylindrical or conical housing of the slits }
B01F 5/0678	...	{ characterized by the relative position of the surfaces during operation }
B01F 5/0679	....	{ the surfaces being maintained in a fixed position, spaced from each other, therefore maintaining the slit always open }

- B01F 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) }
- B01F 5/0681 { the surfaces being part of a valve construction, formed by opposed members in contact, e.g. automatic positioning caused by spring pressure }
- B01F 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) }
- B01F 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 }
- B01F 5/0684 { with a rotor surrounded by a stator provided with orifices }
- B01F 5/0685 { with reciprocating pistons }
- B01F 5/0687 . . . { characterized by the elements through which the components are pressed together }
- B01F 5/0688 { the components being pressed through orifices in elements, e.g. flat plates or cylinders, which obstruct the whole diameter of the tube }
- B01F 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 }
- B01F 5/069 { the elements comprising means for adjusting the orifices }
- B01F 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) }
- B01F 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 }
- B01F 5/0693 { the components being pressed through sieves, screens or meshes which obstruct the whole diameter of the tube }
- B01F 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 }
- B01F 5/0695 { the components being pressed through foam-like inserts or through a bed of loose bodies, e.g. balls }
- B01F 5/0696 { through a bed of balls }
- B01F 5/0697 { through a bed of fibres, steel wool or wood chips }
- B01F 5/0698 { through a foam or expanded material body }
- B01F 5/08 . . Homogenizing or emulsifying nozzles { ([B01F 11/0208](#) takes precedence; mixing heads without moving stirrer for plastics [B29B 7/7457](#)) }
- B01F 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) }
- B01F 5/102 . . { the mixture being circulated during mixing through a set of tubes, e.g. involving gradually introducing a component into a circulating flow }
- B01F 5/104 . . { provided with rotary stirrer }
- B01F 5/106 . . { the mixture being discharged from and reintroduced into a receptacle through a recirculation tube into which an additional component is introduced }
- B01F 5/108 . . { provided with an internal pump to recirculate the material inside the receptacle }

- B01F 5/12 . Pump mixers, { i.e. the mixing taking place in the pump itself }
- B01F 5/14 . . of the gear type
- B01F 5/145 . . . { using a Wankel pump }
- B01F 5/16 . . Turbo-mixers, { i.e. of the centrifugal-pump type }
- B01F 5/162 . . . { Multi-staged turbo-mixers }
- B01F 5/165 . . . { consisting of a stator-rotor system with intermeshing teeth or cages }
- B01F 5/167 . . . { with axial access to the mixing device at both its sides }

- B01F 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) }
- B01F 5/20 . . with nozzles { ([B01F 3/04049](#) takes precedence; nozzles per se [B05B 1/00](#)) }
- B01F 5/205 . . . { for spraying a fluid on falling particles or on a liquid curtain }
- B01F 5/22 . . with rotary { parts, e.g. } discs { ([B01F 3/04035](#), [B01F 7/0075](#) take precedence) }
- B01F 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 }
- B01F 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 }
- B01F 5/225 . . . { for spraying a liquid on falling particles or on a liquid curtain ([B01F 5/223](#)
takes precedence) }
- B01F 5/226 . . . { the material being fed on both sides of a part rotating about a vertical axis }
- B01F 5/228 . . . { the rotating part being composed of at least two cooperating members rotating
independently about the same vertical axis }

- B01F 5/24 . Falling-particle mixers, { e.g. } with repeated action { (spraying fluids on falling
particles [B01F 5/205](#), [B01F 5/225](#)) }
- B01F 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](#)) }
- B01F 5/242 . . . { by means of conduits having inlet openings at different levels }
- B01F 5/243 { by means of a central conduit or central set of conduits }
- B01F 5/244 . . . { the receptacle being divided into compartments for receiving or storing the
different components }
- B01F 5/245 . . . { Flow collectors therefor }
- B01F 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 }
- B01F 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](#)) }
- B01F 5/248 . . { the particles falling on a film flowing along the inner wall of a mixer }

- B01F 5/26 . Falling-particle mixers with moving { or vibrating } means, e.g. stirrers, for increasing
the mixing { ([B01F 5/24](#) takes precedence) }
- B01F 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

B01F 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](#) })

- B01F 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) }
- B01F 7/00016 .. { Nature of the rotating mixing element }
- B01F 7/00025 ... { Stirrers with replaceable wearing elements; Wearing elements therefor }
- B01F 7/00033 ... { Characterised by the materials the stirrers are made of }
- B01F 7/00041 { with particular surface characteristics, e.g. coated, rough }
- B01F 7/0005 ... { Deformable stirrers ([B01F 7/00208](#) takes precedence) }
- B01F 7/00058 { with mechanical means to alter the position of the stirring elements }
- B01F 7/00066 { deformable by centrifugal force }
- B01F 7/00075 { the position of the stirring elements depending on the direction of rotation of the stirrer }
- B01F 7/00083 ... { Stirrers made by deforming a plate }
- B01F 7/00091 .. { Mounting of the stirring elements on the stirrer shaft ([B01F 7/00208](#) takes precedence) }
- B01F 7/001 ... { Fixing of the stirrer to the shaft }
- B01F 7/00108 ... { Disposition with respect to the rotating axis }
- B01F 7/00116 { parallel with respect to the rotating axis }
- B01F 7/00125 { perpendicular with respect to the rotating axis }
- B01F 7/00133 { oblique with respect to the rotating axis }
- B01F 7/00141 { directly mounted on the rotating axis }
- B01F 7/0015 { on the free end of the rotating axis }
- B01F 7/00158 { having stirring elements connected to the stirrer shaft each by a single radial rod, other than open frameworks }
- B01F 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 }
- B01F 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) }
- B01F 7/00183 ... { with stirring elements moving with respect to the stirrer shaft, e.g. floating or comprising contracting chambers }
- B01F 7/00191 ... { having two or more mixing elements being concentrically mounted on the same shaft }
- B01F 7/002 .. { Mounting of the rotating mixing element in respect to the receptacle }
- B01F 7/00208 ... { having elements for co operating with receptacle wall or bottom, e.g. for scraping ([B01F 7/165](#) takes precedence) }
- B01F 7/00216 ... { occupying substantially the whole interior space of the receptacle }
- B01F 7/00225 ... { eccentrically arranged }
- B01F 7/00233 .. { Configuration of the rotating mixing element }
- B01F 7/00241 ... { Centrifugal stirrers, i.e. having a radial outflow or turbine-type, e.g. with means to guide the flow }
- B01F 7/0025 ... { with arms, paddles, vanes or blades }
- B01F 7/00258 { pin shaped }
- B01F 7/00266 { anchor shaped }

B01F 7/00275	....	{ sickle shaped, i.e. curved in at least one direction }
B01F 7/00283	....	{ rake shaped or grid shaped }
B01F 7/00291	....	{ having vanes or blades, e.g. provided with orifices, extending parallel or oblique to the stirrer axis (B01F 7/00233 takes precedence) }
B01F 7/003	.....	{ having holes in the surface }
B01F 7/00308	.....	{ paddle wheels }
B01F 7/00316	.....	{ the blades extending oblique to the stirrer axis }
B01F 7/00325	....	{ the stirrer being a bent rod supported at one end only }
B01F 7/00333	....	{ spoon-shaped }
B01F 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 }
B01F 7/0035	....	{ having holes in the surface }
B01F 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 }
B01F 7/00366	....	{ the impeller being of airfoil, aerofoil type }
B01F 7/00375	....	{ the impeller being of hydrofoil type }
B01F 7/00383	....	{ the impeller being of Rushton type }
B01F 7/00391	...	{ Helices, i.e. stirrers comprising a helically shaped band; Stirrers composed of helically shaped band sections }
B01F 7/004	....	{ having holes in the surface }
B01F 7/00408	....	{ of the corkscrew type composed of a helically shaped band, e.g. flexible spiral springs }
B01F 7/00416	....	{ screws; Worms; Stirrers composed of screw sections }
B01F 7/00425	....	{ blade shaped }
B01F 7/00433	....	{ ribbon shaped, i.e. with an open space between the helical ribbon flight and the rotating axis }
B01F 7/00441	.....	{ forming open frameworks or cages }
B01F 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 }
B01F 7/00458	....	{ having holes in the surface }
B01F 7/00466	....	{ with separate elements other than discs fixed on the discs }
B01F 7/00475	....	{ the discs being made by deforming flat discs }
B01F 7/00483	....	{ cup shaped, e.g. semi sphere }
B01F 7/00491	....	{ with interconnected discs, forming open frameworks or cages }
B01F 7/005	...	{ shaped as cylinders, balls or rollers }
B01F 7/00508	....	{ having holes in the surface }
B01F 7/00516	....	{ Balls }
B01F 7/00525	....	{ Rollers }
B01F 7/00533	.....	{ comprising paddles fixed thereon, e.g. with a total a diameter close to that of the surrounding receptacle }
B01F 7/00541	...	{ with cones, e.g. funnels }
B01F 7/0055	....	{ having holes in the surface }
B01F 7/00558	...	{ provided with brushes, sieves, grids, chains or springs (B01F 7/00408 takes

- precedence) }
- B01F 7/00566 ... { with rigid wires or flexible rods }
- B01F 7/00575 { with a bent rod of non helical configuration supported at one end }
- B01F 7/00583 ... { Openwork frame or cage stirrers not provided for elsewhere }
- B01F 7/00591 ... { provided with tubes for guiding the material }
- B01F 7/006 ... { having additional elements on the stirrer, other than for mixing }
- B01F 7/00608 { having elements for disintegrating, e.g. for milling ([B01F 7/1625](#), [B01F 7/00358](#) take precedence) }
- B01F 7/00616 { having elements for cutting, e.g. knives }
- B01F 7/00625 ... { Multistage systems, i.e. with a plurality of mixing elements mounted in sequence on the same axis }
- B01F 7/00633 { provided with a plurality of similar elements }
- B01F 7/00641 { provided with a plurality of dissimilar elements }
- B01F 7/0065 { comprising helical elements and paddles }

- B01F 7/00658 . { Configuration of the rotating axis }
- B01F 7/00666 .. { Nature of the axis }
- B01F 7/00675 ... { The axis being a flexible shaft }
- B01F 7/00683 .. { Construction of the axis }
- B01F 7/00691 ... { The axis being composed of interconnected parts [M1106] }
- B01F 7/007 ... { The axis being a hollow cylinder, e.g. for feeding a component ([B01F 7/024](#) takes precedence) }
- B01F 7/00708 ... { The axis comprising stirring means and feeding or discharging means fixed on the same axis }
- B01F 7/00716 ... { the axis being adjustable in length, e.g. telescopic }
- B01F 7/00725 .. { Connection of the rotating axis with the drive }

- B01F 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](#)) }
- B01F 7/00741 .. { Vertical beam constructions therefor }

- B01F 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](#)) }
- B01F 7/00758 .. { the stator rotor system being formed by substantial flat surfaces }
- B01F 7/00766 ... { provided with intermeshing elements }
- B01F 7/00775 ... { provided with ribs, ridges or grooves on one surface }
- B01F 7/00783 ... { the surfaces having a conical shape }
- B01F 7/00791 ... { the relative position of the stator and the rotor, gap in between or gap with the walls being adjustable }
- B01F 7/008 .. { the stator rotor system being formed by conical or cylindrical surfaces, e.g. curved surfaces }
- B01F 7/00808 ... { provided with intermeshing elements }
- B01F 7/00816 ... { provided with ribs, ridges or grooves on one surface }
- B01F 7/00825 ... { the surfaces having a conical shape }

- B01F 7/00833 . . . { the relative position of the stator and the rotor, gap in between or gap with the walls being adjustable }
- B01F 7/00841 . . { the mixer being composed of a stator-rotor system being formed by bearing elements, e.g. roller bearings }
- B01F 7/0085 . { the stirring devices being composed of two independently driven coaxial rotors facing each other, e.g. having intermeshing teeth }
- B01F 7/00858 . . { with rotating surfaces facing each other }
- B01F 7/00866 . . . { provided with intermeshing elements }
- B01F 7/00875 . . . { provided with ribs, ridges or grooves on one surface }
- B01F 7/00883 . . { with rotating surfaces next to one another, e.g. on parallel axis }
- B01F 7/00891 . . . { provided with intermeshing elements }
- B01F 7/009 . . . { provided with ribs, ridges or grooves on one surface }
- B01F 7/00908 . { Pipe mixers, i.e. mixing material flowing continuously through pipes, e.g. column mixers }
- B01F 7/00916 . { the stirrer being driven by the moving material }
- B01F 7/00925 . { characterised by the orientation or disposition of the rotor axis, e.g. a plurality of mixing shafts with different or random orientation }
- B01F 7/00933 . . { Variable, e.g. tiltable during the operation }
- B01F 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 }
- B01F 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 }
- B01F 7/00958 . . { with a plurality of rotation axis }
- B01F 7/00966 . . . { having different inclinations, e.g. non parallel }
- B01F 7/00975 . . . { parallel }
- B01F 7/00983 . . . { perpendicular }
- B01F 7/00991 . . . { planetary ([B01F 7/14](#) and [B01F 7/30](#) take precedence) }
- B01F 7/02 . with stirrers rotating about a horizontal or inclined axis
- B01F 7/021 . . { rotating about an inclined axis }
- B01F 7/022 . . { comprising liquid feeding, e.g. spraying means (in general [B01F 15/0203](#)) }
- B01F 7/024 . . . { the liquid being fed through the shaft of the stirrer }
- B01F 7/025 . . { the receptacle being divided into compartments, e.g. with porous divisions }
- B01F 7/027 . . { the receptacles being tiltable, e.g. for emptying (for concrete [B28C 5/141](#), [B28C 5/161](#)) }
- B01F 7/028 . . { provided with buckets }
- B01F 7/04 . . with paddles, { blades } or arms
- B01F 7/041 . . . { comprising two or more shafts, e.g. in consecutive mixing chambers ([B01F 7/025](#) takes precedence) }
- B01F 7/042 { with intermeshing paddles }
- B01F 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) }

B01F 7/045	....	{ with stirrers facing each other, i.e. being supported by opposite walls of the receptacle }
B01F 7/046	....	{ characterised by the shape of the stirrer, i.e. of Z- or S-shape }
B01F 7/047	....	{ with all the shafts in the same receptacle (B01F 7/042 , B01F 7/043 , B01F 7/045 , B01F 7/046 take precedence) }
B01F 7/048	...	{ the paddles co-operating, e.g. intermeshing, with elements on the receptacle wall }
B01F 7/06	..	with propellers
B01F 7/063	...	{ co-operating with stationary guiding means, e.g. baffles }
B01F 7/066	....	{ the guiding means being tubes surrounding the propellers }
B01F 7/08	..	with helices { or sections of helices (with a housing closely surrounding the helices, i.e. extruders, B29C 47/38) }
B01F 7/081	...	{ with at least two helices in the same receptacle }
B01F 7/082	....	{ the helices being closely surrounded by a casing (for mixing or kneading plastics B29B 7/48) }
B01F 7/083	.....	{ the stirrers being composed of helices and paddles on the same shaft, e.g. helically arranged ovally shaped paddles }
B01F 7/085	....	{ the helices intermeshing to knead the mixture }
B01F 7/086	...	{ having a single helice closely surrounded by a casing (for mixing or kneading plastics B29B 7/42) }
B01F 7/087	...	{ with two or more helices in respective separate casings , e.g. one casing inside the other }
B01F 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 }
B01F 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) }
B01F 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 }
B01F 7/12	..	with { rotary } cylinders, { e.g. having special profile cross-section (B01F 7/145 takes precedence) }
B01F 7/14	..	with stirrers having planetary motion, { i.e. rotating about their own axis and about a horizontal sun axis }
B01F 7/145	...	{ the stirrers being cylinders, balls or gears }
B01F 7/16	.	with stirrers rotating about a substantially vertical axis
B01F 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 }
B01F 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 }
B01F 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 }
B01F 7/162	..	{ the stirrers being driven from the bottom of the receptacle }

- B01F 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 }
- B01F 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 }
- B01F 7/1635 { the stirrers co-operating with stationary guiding elements, e.g. surrounding stators or intermeshing stators ([B01F 7/164](#) takes precedence) }
- B01F 7/164 ... { the stirrers co-operating with surrounding stators, or with intermeshing stators, e.g. comprising slits, orifices or screens }
- B01F 7/1645 ... { the stirrers co-operating with stationary guiding elements ([B01F 7/164](#) takes precedence) }
- B01F 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](#)) }
- B01F 7/1655 .. { the stirrers being additionally moved radially, or oscillating about an axis perpendicular to the stirrer axis ([B01F 7/30](#) takes precedence) }
- B01F 7/166 .. { with stirrers rotating at different speeds or in opposite direction about the same axis }
- B01F 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) }
- B01F 7/167 ... { the receptacle being subdivided in adjacent compartments }
- B01F 7/1675 .. { co-operating with deflectors or baffles fixed to the receptacle ([B01F 7/1635](#), [B01F 7/1645](#) take precedence) }
- B01F 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 }
- B01F 7/1685 ... { the baffles being adjustable or movable ([B01F 7/168](#) takes precedence) }
- B01F 7/169 .. { the receptacle being divided into superimposed compartments }
- B01F 7/1695 .. { with an independent receptacle-stirrer unit, the stirrer being adapted to be coupled to a drive mechanism }
- B01F 7/18 .. with paddles or arms { ([B01F 7/162](#), [B01F 7/165](#) take precedence) }
- B01F 7/183 ... { the paddles co-operating, e.g. intermeshing, with elements fixed on the receptacle walls }
- B01F 7/186 { the elements being vertically arranged, e.g. fixed on the bottom }
- B01F 7/20 ... with fixed axis
- B01F 7/22 .. with propellers { ([B01F 7/162](#) takes precedence) }
- B01F 7/225 ... { forcing the material through orifices or slits, e.g. in a stationary part }
- B01F 7/24 .. with helices { or screws ([B01F 7/30](#) takes precedence) }
- B01F 7/241 ... { with at least two helices, e.g. intermeshing helices }
- B01F 7/242 ... { the helices being mounted centrally in the receptacle for mixing in batches ([B01F 7/241](#) takes precedence) }
- B01F 7/243 { the helices being surrounded by a guiding tube }
- B01F 7/244 { combined with means for uniting flows of material taken from different parts of the receptacle }
- B01F 7/245 { with conical helices }
- B01F 7/246 { the helices having a diameter only slightly less than the diameter of the receptacle ([B01F 7/245](#) takes precedence) }
- B01F 7/247 { with additional mixing elements other than helices; having inner and outer helices; with helices surrounding a guiding tube }

- B01F 7/248 . . . { the material flowing continuously through the receptacle }
- B01F 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](#)) }
- B01F 7/28 . . with { rotary } cylinders, { e.g. having special profile cross-section }
- B01F 7/285 . . . { with hollow cylinders or cones, e.g. perforated or having special stirring elements thereon }
- B01F 7/30 . . with stirrers having planetary motion, { i.e. rotating about their own axis and about a vertical sun axis }
- B01F 7/302 . . . { using only helical stirrers }
- B01F 7/305 . . . { with at least one stirrer mounted on the sun axis }
- B01F 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 }
- B01F 7/32 . . with openwork frames or cages

- B01F 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 }

- B01F 9/0001 . { the receptacles being submitted to rotation about two different axes, e.g. receptacles having planetary motion }
- B01F 9/0003 . { Use of centrifuges for mixing }
- B01F 9/0005 . { the receptacles rotating about an axis at an angle to their longitudinal axis }
- B01F 9/0007 . { the material flowing continuously through the receptacles from feed to discharge, e.g. the feed and discharge being at the same end }
- B01F 9/0009 . . { with at least one screw inside the receptacle for feeding or discharging, e.g. the axis of screw and receptacle being parallel }
- B01F 9/001 . . { the feed and discharge openings being at opposite ends of the receptacle }
- B01F 9/0012 . . { the feed and discharge openings being at the same side of the receptacle }
- B01F 9/0014 . { Mixing the contents of packages or like independent containers, e.g. tins, bottles, by rotating them }
- B01F 9/0016 . . { the containers being supported by driving means, e.g. by rotating rollers }
- B01F 9/0018 . . { the containers being modified for coupling to rotating frames or the like; Containers therefor; Coupling means therefor }
- B01F 9/002 . . . { for test-tubes or like small containers, e.g. containing blood samples }
- B01F 9/0021 . . . { Several containers being held in a support for simultaneous mixing, optionally with feeding and discharging means, e.g. for bottles in crates }
- B01F 9/0023 . . { Imparting a composite movement to a plurality of bottles }
- B01F 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 }
- B01F 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 }

- B01F 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 }
- B01F 9/003 .. { Construction details of the holders for the independent packages or receptacles }
- B01F 9/0032 . { Parts or components, e.g. receptacles, feeding or discharging means ([B01F 9/0009](#) takes precedence) }
- B01F 9/0034 .. { Receptacles, e.g. provided with liners }
- B01F 9/0036 ... { characterised by the shape or cross-section of the receptacle, e.g. of Y -, Z -, S -, or X shape }
- B01F 9/0038 { Non-cylindrical sections, e.g. elliptical, irregular }
- B01F 9/004 { Polygonal sections, e.g. triangular, square }
- B01F 9/0041 { Conical, double-conical, diabolo shapes }
- B01F 9/0043 { Cubic, cubical, polyhedronal shapes }
- B01F 9/0045 { S shapes }
- B01F 9/0047 { Spherical shapes }
- B01F 9/0049 { Toroidal shapes }
- B01F 9/005 { V or W shapes }
- B01F 9/0052 { X shapes }
- B01F 9/0054 { Y or double Y shapes }

- B01F 9/02 . rotating about a horizontal or inclined axis, e.g. drum mixers
- B01F 9/025 .. { comprising liquid spraying devices }
- B01F 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 }
- B01F 9/06 .. with fixed bars, { i.e. stationary, or fixed on the receptacle }
- B01F 9/08 .. with { moving, e.g. } rotating stirring devices, { i.e. moving with respect to the receptacle }

- B01F 9/10 . rotating about a { substantially } vertical axis
- B01F 9/103 .. { co-operating with stationary mixing elements ([B01F 9/106](#) takes precedence) }
- B01F 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 }
- B01F 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](#)) }
- B01F 9/125 ... { Pan-type mixers, i.e. having stirrers moving along the bottom of a pan-shaped receptacle }
- B01F 9/14 .. with propellers
- B01F 9/16 .. with helices, { e.g. rotating about an inclined axis }
- B01F 9/18 .. with rotary discs
- B01F 9/20 .. with { rotary } cylinders

- B01F 9/22 . with stirrers having planetary motion { ([receptacles having planetary motion B01F 9/0001](#)) }

- B01F 11/00** **Mixers with shaking, oscillating, or vibrating mechanisms ([B01F 13/04](#) takes precedence)**

- B01F 11/0002 . { with a mixing receptacle rotating alternately in opposite directions, or rotating about an axis which intersects the receptacle axis at an angle }
- B01F 11/0005 . { Mixing the contents of independent containers, e.g. test-tubes, by shaking or oscillating them }
- B01F 11/0008 .. { Holders therefor }
- B01F 11/0011 .. { for beverage bottles, e.g. within crates or with feeding means for the bottles }
- B01F 11/0014 .. { with supporting means moving in a horizontal plane, e.g. describing an orbital path for moving the containers about an axis which intersects the receptacle axis at an angle ([B01F 11/0017](#), [B01F 11/0022](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence) }
- B01F 11/0017 .. { by pivoting the containers about an axis ([B01F 11/0025](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence) }
- B01F 11/002 ... { the containers being of the sandglass-type or being linked with their openings }
- B01F 11/0022 .. { the containers being submitted to a rectilinear movement ([B01F 11/0025](#), [B01F 11/0031](#), [B01F 11/0034](#) take precedence) }
- B01F 11/0025 .. { the containers being submitted to a composite movement not in a horizontal plane, e.g. rectilinear and pivoting }
- B01F 11/0028 .. { the containers being submitted to a wobbling movement }
- B01F 11/0031 .. { the vibrations being caused by an unbalanced rotating member }
- B01F 11/0034 .. { the vibrations being caused by electromagnets }
- B01F 11/0037 .. { with means for transporting test tubes to and from the stirring device }
- B01F 11/004 .. { the vibrations being caused by piezoelectric elements }
- B01F 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 }
- B01F 11/0045 .. { comprising a receptacle with a deformable part, e.g. a membrane, to which a motion is imparted }
- B01F 11/0048 ... { the motion being a linear movement to one part of the receptacle }
- B01F 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 }
- B01F 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](#)) }
- B01F 11/0057 .. { for material flowing continuously axially therethrough }
- B01F 11/006 . { having an annular trough vibrating about its central axis }
- B01F 11/0062 . { having a receptacle submitted to a composite movement, i.e. at least one movement being vibratory or oscillatory }
- B01F 11/0065 . { the material being contained in a flexible bag submitted to periodical deformation }
- B01F 11/0068 . { having a vibrating receptacle provided with stirring elements, e.g. independent stirring elements }
- B01F 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](#)) }

- B01F 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 }
- B01F 11/0077 . { for material continuously moving therethrough ([B01F 11/0042](#), [B01F 11/0057](#), [B01F 11/006](#), [B01F 11/0241](#) take precedence) }
- B01F 11/008 . { the stirrers performing an oscillatory, vibratory or shaking movement ([B01F 11/0054](#), [B01F 11/04](#) take precedence) }
- B01F 11/0082 . . { performing a rectilinear reciprocating movement }
- B01F 11/0085 . . { performing a superposed additional movement other than oscillation, vibration or shaking }
- B01F 11/0088 . . { performing an oscillatory movement about an axis }
- B01F 11/0091 . . { Stirrers constructions }
- B01F 11/0094 . { having a vibrating receptacle ([B01F 11/0002](#), [B01F 11/0005](#), [B01F 11/006](#), [B01F 11/0062](#), [B01F 11/0068](#) take precedence) }
- B01F 11/0097 . { Drives therefor, e.g. crank mechanisms ([B01F 11/0005](#) takes precedence) }
- B01F 11/02 . Mixing by means of { high-frequency, e.g. } ultrasonic vibrations, { e.g. jets impinging against a vibrating plate }
- B01F 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 }
- B01F 11/0216 . . { the material being forced through a narrow vibrating slit }
- B01F 11/0225 . . { comprising a supplementary stirring element }
- B01F 11/0233 . . . { the vibrations being generated by the rotation of the stirring element }
- B01F 11/0241 . . { for material continuously moving through a tube, e.g. by deforming the tube ([B01F 11/0208](#) takes precedence) }
- B01F 11/025 . . . { with a vibrating element inside the tube }
- B01F 11/0258 . . { using a vibrating element inside a receptacle }
- B01F 11/0266 . . { with vibrating the receptacle or part of it }
- B01F 11/0275 . . . { caused by hitting or striking the receptacle }
- B01F 11/0283 . . { transmitting the vibratory energy by means of a fluid, e.g. by means of air shock waves }
- B01F 11/0291 . . { Methodical aspects; Controlling }
- B01F 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](#)) }

B01F 13/00 Other mixers; Mixing plant, including combinations of { mixers, e.g. of } dissimilar mixers

- B01F 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) }
- B01F 13/0003 . . { the energy being electrical energy working on the ingredients or compositions for mixing them }

- B01F 13/0005 . . { the energy being electric fields for electrostatically charging of the ingredients or compositions for mixing them }
- B01F 13/0006 . . { the energy being magnetic or electromagnetic energy, radiation working on the ingredients or compositions for or during mixing them }
- B01F 13/0008 . . { the energy being in the form of a laser to modify the characteristics or conditions of the products, e.g. for heating }
- B01F 13/001 . . { the energy being particle radiation working on the ingredients or compositions for or during mixing them }
- B01F 13/0011 . { Mixers in which the mixing of the components is achieved by natural or induced convection }
- B01F 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 }
- B01F 13/0015 . { Mixers having moving endless chains or belts, e.g. provided with paddles, as mixing elements }
- B01F 13/0016 . { Movable or transportable mixing devices or plants }
- B01F 13/0018 . . { Movable mixing devices, i.e. apt to be shifted or displaced from one place to another, e.g. by human force }
- B01F 13/002 . . . { portable during use, e.g. hand-held ([B05C 17/00553](#) takes precedence, whisks comprising mixing wires [A47J 43/1087](#)) }
- B01F 13/0022 { Small portable bottles, flasks, vials, e.g. with means for mixing ingredients or for homogenizing their content, e.g. by hand shaking }
- B01F 13/0023 { Of the syringe, cartridge type }
- B01F 13/0025 { Of the pipette type }
- B01F 13/0027 { Of the hand-held gun type }
- B01F 13/0028 { Stirring devices adapted to be connected to a standard boring machine or other kind of domestic tool }
- B01F 13/003 . . . { adapted to be mounted during use on a standard, base or support }
- B01F 13/0032 . . . { movable by mechanical means, e.g. hoisting systems, grippers, lift trucks }
- B01F 13/0033 . . . { movable by human force, e.g. kitchen or table devices }
- B01F 13/0035 . . { vehicle mounted (mixing devices for cement mounted on vehicles with provisions for mixing during transport [B28C 5/42](#)) }
- B01F 13/0037 . . . { the vehicle being self-propelled, e.g. truck mounted, provided with a motor, driven by tracks ([B01F 13/0038](#) to [B01F 13/0047](#) take precedence) }
- B01F 13/0038 . . . { the vehicle being a carriage moving or driving along fixed or movable beams or bridges }
- B01F 13/004 . . . { the vehicle being a trailer which is hand moved or coupled to self propelling vehicles }
- B01F 13/0042 . . . { the vehicle being moved by human force }
- B01F 13/0044 . . . { using rails for guiding the mixing installation during moving or displacing }
- B01F 13/0045 . . . { using sledges or skids for moving or displacing the mixing installation }
- B01F 13/0047 . . . { using driven tracks, caterpillars, crawler for moving or displacing the mixing installation }
- B01F 13/0049 . . { Floating }
- B01F 13/005 . { Mixers with loose mixing elements, e.g. balls, in a receptacle }

- B01F 13/0052 .. { using balls as loose mixing element }
- B01F 13/0054 .. { using bubbles as loose mixing element }
- B01F 13/0055 .. { using sliders or cylindrical elements as loose mixing element }
- B01F 13/0057 .. { using springs as loose mixing element }

- B01F 13/0059 . { Micromixers }
- B01F 13/0061 .. { using specific means for arranging the streams to be mixed }
- B01F 13/0062 ... { Hydrodynamic focussing }
- B01F 13/0064 ... { Mixing chamber }
- B01F 13/0066 ... { Interdigital streams, i.e. lamellae }
- B01F 13/0067 { The interdigital streams being concentric lamellae }
- B01F 13/0069 .. { the components flowing in the form of droplets ([B01F 3/0807](#) take precedence) }
- B01F 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 }
- B01F 13/0072 ... { the components being formed by independent droplets which are alternated, the mixing of the components being achieved by diffusion between droplets }
- B01F 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) }
- B01F 13/0076 ... { using electrohydrodynamic (EHD) or electrokinetic (EKI) phenomena to mix or move the fluids }
- B01F 13/0077 ... { using magnetohydrodynamic (MHD) phenomena to mix or move the fluids }
- B01F 13/0079 ... { using heat to mix or move the fluids }
- B01F 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. }
- B01F 13/0083 ... { using surface tension to mix, move or hold the fluids }
- B01F 13/0084 { using hydrophilic/hydrophobic surfaces }
- B01F 13/0086 { using roughness of the surfaces }
- B01F 13/0088 ... { using a biological motor, i.e. biological molecules which are activated and movement is induced to stir a fluid }
- B01F 13/0089 ... { using coupled electrorotation (CER) phenomena to mix or move fluids, or to sense properties of the mixture }
- B01F 13/0091 ... { using ciliary stirrers to move or stir the fluids }
- B01F 13/0093 ... { the mixing being achieved by diffusion between layers ([B01F 13/0069](#) takes precedence) }
- B01F 13/0094 ... { the mixing being performed in a mixing chamber where the products are brought into contact }
- B01F 13/0096 ... { using turbulence on microscale }

- B01F 13/0098 . { Mixing after turning the mixing vessel upside down }

- B01F 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 conveyer [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

- B01F 13/0205 .. { Methods }
- B01F 13/0211 .. { comprising supplementary stirring elements }
- B01F 13/0216 ... { the gas being introduced through the shaft of the stirring element }
- B01F 13/0222 .. { for mixing liquids ([B01F 13/0211](#), [B01F 13/0233](#), [B01F 13/0255](#) take precedence) }
- B01F 13/0227 .. { for mixing material moving continuously therethrough, e.g. using impinging jets }
- B01F 13/0233 .. { in receptacles having guiding conduits therein, e.g. for feeding the gas to the bottom of the receptacle }
- B01F 13/0238 ... { with vertical conduits through which the material is being moved upwardly driven by the fluid }
- B01F 13/0244 { with a central conduit or a central set of conduits }
- B01F 13/025 { involving gas diffusers at the bottom }
- B01F 13/0255 .. { in receptacles with gas supply only at the bottom ([B01F 13/0233](#) takes precedence) }
- B01F 13/0261 ... { through orifices arranged around a central cone ([B01F 13/0266](#) takes precedence) }
- B01F 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 }
- B01F 13/0272 .. { by blowing gas on the material from above }
- B01F 13/0277 .. { Controlling }
- B01F 13/0283 .. { Parts, e.g. diffusion elements; Accessories }
- B01F 13/0288 .. { Storing receptacles provided with separate mixing chambers }
- B01F 13/0294 .. { Plants }

- B01F 13/04 . Mixers combined with safety devices { ([safety devices in general F16P](#)) }
- B01F 13/042 .. { with a safety or relief valve }
- B01F 13/045 .. { Safety devices concerning the operation of the mixer }
- B01F 13/047 ... { with locking, blocking or interlocking mechanisms for preventing operation of the actuation mechanism of the mixing device }

- B01F 13/06 . Mixers adapted for working at sub- or super-atmospheric pressure, { e.g. combined with defoaming }
- B01F 13/065 .. { Working at super-atmospheric pressure }

- B01F 13/08 . Magnetic mixers; { Mixers having magnetically driven stirrers }
- B01F 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 }
- B01F 13/0818 .. { using independant floating stirring elements }
- B01F 13/0827 .. { using supported or suspended stirring elements }
- B01F 13/0836 ... { using an axis supported in several points for mounting the stirring element }
- B01F 13/0845 ... { using a bearing, tube, opening or gap for internally supporting the stirring element }

- B01F 13/0854 ... { supporting the stirring element in one point }
- B01F 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 }
- B01F 13/0872 ... { using a stud for supporting the stirring element }
- B01F 13/0881 ... { using a wire for supporting or suspending the stirring element, e.g. stirrer sliding on a wire }
- B01F 13/089 ... { the stirring element being suspended by one point }

- B01F 13/10 . Mixing plant, including combinations of { mixers, e.g. of } dissimilar mixers { ([B01F 13/0294](#) takes precedence) }
- B01F 13/1002 .. { for granular material }
- B01F 13/1005 ... { with several silos arranged in a row or around a central delivery point, e.g. provided with proportioning means }
- B01F 13/1008 { the silos being arranged in a circular configuration, i.e. in a circle around a central delivery point }
- B01F 13/1011 ... { involving other than mixing operations, e.g. milling, sieving, drying }
- B01F 13/1013 .. { Combinations of similar mixers, e.g. with rotary stirring devices in two or more receptacles ([B01F 13/1002](#) takes precedence) }
- B01F 13/1016 ... { in two or more consecutive, i.e. successive, mixing receptacles or being consecutively arranged }
- B01F 13/1019 ... { in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle }
- B01F 13/1022 ... { mixing simultaneously in two or more mixing receptacles }
- B01F 13/1025 .. { Combinations of dissimilar mixers ([B01F 13/1002](#) takes precedence) }
- B01F 13/1027 ... { with consecutive receptacles }
- B01F 13/103 { with moving and non-moving stirring devices }
- B01F 13/1033 ... { with moving and non-moving stirring devices in the same receptacle }
- B01F 13/1036 ... { in two or more alternative mixing receptacles, e.g. mixing in one receptacle and dispensing from another receptacle }
- B01F 13/1038 ... { mixing simultaneously in two or more mixing receptacles }
- B01F 13/1041 .. { comprising mixers specially adapted for mixing in combination with disintegrating ([B01F 7/048](#), [B01F 13/1002](#) take precedence) }
- B01F 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 }
- B01F 13/1047 ... { Devices with consecutive working receptacles, e.g. with two intermeshing tools in one of the receptacles ([B01F 13/1044](#) takes precedence) }
- B01F 13/105 ... { Devices with several tools rotating about different axis in the same receptacle }
- B01F 13/1055 .. { Mixing plant with mixing receptacles receiving material dispensed from several component receptacles, e.g. paint tins }
- B01F 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 }
- B01F 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 }
- B01F 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 ([data processing in buying-selling transactions G06F 17/602](#)) }

- B01F 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 }
- B01F 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 }
- B01F 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 }

B01F 15/00 **Accessories for mixers;** { Auxiliary operations or auxiliary devices; Parts or details of general application }

- B01F 15/00006 . { Mixing heads comprising a driven stirrer ([mixing heads without driven stirrer B01F 5/0077](#)) }
- B01F 15/00012 . . { the stirrer being provided with a surrounding stator }
- B01F 15/00019 . { Washing or cleaning mixers, e.g. using knockers or scrapers; Inhibiting build-up of material on machine parts ([cleaning in general B08B](#)) }
- B01F 15/00025 . . { using a fluid }
- B01F 15/00032 . . . { by means of jets of fluid, e.g. air }
- B01F 15/00038 . . { using mechanical elements }
- B01F 15/00045 . . . { using a brush for cleaning out rests of products }
- B01F 15/00051 . . . { using pushers, i.e. a piston, for pushing out rests of products }
- B01F 15/00058 . . . { using scrapers for cleaning mixers }
- B01F 15/00064 . . { using one or some of the components of the mixture to wash-out the mixer }
- B01F 15/00071 . . { Working under sterile conditions; Sterilizing the mixer or parts thereof ([sterilizing in general A61L](#)) }
- B01F 15/00123 . { Controlling; Testing; Measuring ([B01F 15/0408](#) takes precedence) }
- B01F 15/00129 . . { Measuring operational parameters ([B01F 15/00201](#) and [B01F 15/00207](#) take precedence) }
- B01F 15/00136 . . . { Measuring flow rate }
- B01F 15/00142 { Measuring mass flow rate }
- B01F 15/00149 { Measuring volumetric flow rate }
- B01F 15/00155 . . . { Measuring the level of material in a container or the position or shape of the upper surface of the material }
- B01F 15/00162 . . . { Measuring pressure }
- B01F 15/00168 . . . { Measuring speed of feeding material, e.g. bands or strips }
- B01F 15/00175 . . . { Measuring temperature }
- B01F 15/00181 { using infrared radiation thermometer or pyrometer, infrared sensors for temperature measurement without contact }
- B01F 15/00188 . . . { Measuring volume }
- B01F 15/00194 . . . { Measuring weight }
- B01F 15/00201 . . { Measuring data of the driving system, e.g. torque, speed, power; Motor control }
- B01F 15/00207 . . { Measuring properties of the mixtures, e.g. temperature, density, colour, vibration, noise ([B01F 15/00201](#) takes precedence) }

B01F 15/00214	...	{ Measuring colour or luminiscence }
B01F 15/0022	...	{ Measuring concentration, pH, pOH, p(ION), oxygen-demand (B01F 15/00227 takes precedence) }
B01F 15/00227	...	{ Measuring electrical conductivity or dielectric constant of the mixture }
B01F 15/00233	...	{ Measuring density or solids or particle number }
B01F 15/0024	...	{ Measuring humidity, e.g. moisture content }
B01F 15/00246	...	{ Measuring viscosity }
B01F 15/00253	..	{ Controlling the whole mixing process }
B01F 15/00259	..	{ characterized by the means for measuring parameters }
B01F 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 }
B01F 15/00272	...	{ using radiation for measuring parameters of mixture or components to be mixed }
B01F 15/00279	..	{ characterized by the type of control technique used }
B01F 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 }
B01F 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 }
B01F 15/00298	...	{ Controlling the mixing process by fuzzy control, i.e. a prescribed fuzzy rule }
B01F 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 }
B01F 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) }
B01F 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) }
B01F 15/00324	...	{ Controlling using ultrasonic waves during the operation }
B01F 15/00331	..	{ characterized by the parameter being controlled }
B01F 15/00337	...	{ Controlling the position of baffles used to modify the flow in a conduit or a container }
B01F 15/00344	...	{ Controlling the amount of delivered fluid during a period }
B01F 15/0035	...	{ Controlling the level of the material in the mixer }
B01F 15/00357	...	{ Controlling pressure }
B01F 15/00363	...	{ Controlling speed during the operation }
B01F 15/0037	....	{ Controlling the speed of feeding of at least one component to be mixed }
B01F 15/00376	....	{ Controlling the speed of the mixing device during the operation }
B01F 15/00383	.....	{ Controlling the linear speed of the tip of a moving stirrer during the operation }
B01F 15/00389	.....	{ Controlling the speed of rotation of the mixing axis, stirrer or receptacle during the operation }
B01F 15/00396	...	{ Controlling temperature }
B01F 15/00402	...	{ Controlling time, i.e. duration, of at least one parameter during the operation }

B01F 15/00409	....	{ Controlling the duration of the mixing process or parts of it }
B01F 15/00415	....	{ Controlling the time of feeding of at least one of the components to be mixed }
B01F 15/00422	...	{ Controlling the volume of at least one component to be mixed }
B01F 15/00428	...	{ Controlling the weight of at least one component to be mixed }
B01F 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) }
B01F 15/00441	..	{ Construction of driving shafts }
B01F 15/00448	..	{ for vertical stirrer shafts (B01F 15/00461 takes precedence) }
B01F 15/00454	...	{ Driving several stirrer shafts, e.g. about the same axis }
B01F 15/00461	..	{ Driving independent stirrer shafts, i.e. not fitted on the container }
B01F 15/00467	..	{ Driving reciprocating or oscillating stirrers }
B01F 15/00474	..	{ Electrical circuits therefor }
B01F 15/0048	..	{ Couplings therefor, e.g. with torque sensing means (couplings or clutches in general F16D ; measuring torque G01L 3/00) }
B01F 15/00487	..	{ Nature of the drive }
B01F 15/00493	...	{ Driven by acoustic force, e.g. acoustically induced bubbles, acoustic windmill, acoustic scallop }
B01F 15/005	...	{ Flow driven }
B01F 15/00506	...	{ Hand driven }
B01F 15/00512	....	{ Shaking by hand a portable receptacle or stirrer for mixing }
B01F 15/00519	...	{ Battery driven }
B01F 15/00525	...	{ Gas driven }
B01F 15/00532	...	{ Gravity driven, e.g. by means of weights out of balance, plunger-weights moving in a cylinder }
B01F 15/00538	...	{ Motor driven, i.e. by means of an electric or IC motor }
B01F 15/00545	...	{ Hydraulically driven }
B01F 15/00551	...	{ Driven by optical pressure force, e.g. produced by a laser beam }
B01F 15/00558	...	{ Driven by solar energy }
B01F 15/00564	...	{ Driven by the rotation of the wheels during movement }
B01F 15/00571	...	{ Wind driven }
B01F 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 }
B01F 15/00668	..	{ Mounting or supporting stirrer shafts on receptacles }
B01F 15/00675	...	{ by supporting only one extremity of the shaft }
B01F 15/00681	....	{ at the top of the receptacle }
B01F 15/00688	....	{ at the bottom of the receptacle, e.g. by studs }
B01F 15/00694	....	{ at a side wall of the receptacle }
B01F 15/00701	...	{ by supporting both extremities of the shaft }
B01F 15/00707	....	{ at the top and at the bottom of the receptacle, e.g. for performing a conical orbital movement about a vertical axis }
B01F 15/00714	....	{ at the side walls of the receptacle }

- B01F 15/0072 . . . { by means of clamps, clamping arrangements for fixing attached stirrers or independent stirrer units }
- B01F 15/00727 . . . { using inflatable arrangements for supporting a stirring element }
- B01F 15/00733 . . { Clamping or holding arrangements for mounting receptacles on mixing devices, e.g. for shaking, vibrating or rotating the receptacle }
- B01F 15/0074 . . . { having a cup-shaped or cage-type form }
- B01F 15/00746 . . . { having a jaw-type or finger-type shape }
- B01F 15/00753 . . . { of the vertically movable, two-plates type }
- B01F 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 }
- B01F 15/00772 . . { Supporting receptacles on frames or stands ([B01F 15/00733](#) takes precedence; frames of machines, stands as support for apparatus, in general [F16M](#)) }

- B01F 15/00779 . { Receptacle closures, covers or doors; Mechanisms for operating them }
- B01F 15/00785 . . { by rotating them about an axis parallel to the plane of the opening }
- B01F 15/00792 . . { by moving them in the plane of the opening ([B01F 15/00818](#) takes precedence) }
- B01F 15/00798 . . . { by rotating them about an axis perpendicular to the plane of the opening }
- B01F 15/00805 . . { by moving them perpendicular to the plane of the opening }
- B01F 15/00811 . . . { and moving them afterwards in another direction }
- B01F 15/00818 . . { Moving covers on a cylindrical drum in a circular path along the drum }

- B01F 15/00824 . { Receptacles ([B01F 9/0032](#), [B01F 15/00779](#) take precedence) }
- B01F 15/00831 . . { Nature of the receptacle }
- B01F 15/00837 . . . { provided with liners, e.g. wear resistant or flexible liners }
- B01F 15/00844 . . . { Surface characteristics, e.g. coated, rough }
- B01F 15/0085 . . . { the mixing receptacle being flexible, e.g. flexible bags supported by rigid containers }
- B01F 15/00857 . . . { the mixing receptacle or conduit being transparent or comprising transparent parts }
- B01F 15/00863 . . { Multi compartment receptacles }
- B01F 15/0087 . . . { comprising compartments keeping the materials to be mixed separated until the mixing is initiated ([B65D 81/32](#) takes precedence) }
- B01F 15/00876 . . { Configuration of the interior }
- B01F 15/00883 . . . { provided with baffles, plates or bars on the wall or the bottom }
- B01F 15/00889 { with horizontal baffles mounted on the walls }
- B01F 15/00896 { with vertical baffles mounted on the walls }
- B01F 15/00902 . . . { provided with guide tubes on the wall or the bottom }
- B01F 15/00909 . . { Closely surrounding the rotating element }

- B01F 15/00915 . { Baffles; Flow breakers }

- B01F 15/00922 . { Maintenance, e.g. replacing, repairing or inspecting; Making mixers or parts thereof }

- B01F 15/00928 . { General build-up of the mixers }
- B01F 15/00935 . . { the mixer being built-up from a plurality of modules or stacked plates comprising complete or partial elements of the mixer }

- B01F 15/00941 .. { the mixer or mixing elements being collapsible, i.e. when discharging the products }
- B01F 15/00948 ... { the complete mixer being collapsible, i.e. the housing can be collapsed }
- B01F 15/00954 . { Preventing generation of dust or dirt; Sieves; Filters ([B01F 15/00019](#), [B01F 15/00779](#) take precedence) }
- B01F 15/00961 .. { Preventing generation of dust }
- B01F 15/00967 .. { using splash guards in mixers for avoiding dirt or projection of material }
- B01F 15/00974 .. { using filters in mixers, e.g. during venting }
- B01F 15/0098 ... { Filters for micro-living organisms, i.e. filtering of the mixture }
- B01F 15/00987 .. { using sieves in mixers for purposes other than mixing, e.g. eliminating dust during venting }
- B01F 15/00993 .. { Venting, degassing, ventilating of gases, fumes or toxic vapours during mixing }

- B01F 15/02 . Feed or discharge mechanisms
- B01F 15/0201 .. { Feed mechanisms (with proportioning [B01F 15/04](#)) }
- B01F 15/0202 ... { for feeding a mixture of components, i.e. solids in liquid, solids in a gas stream }
- B01F 15/0203 ... { for feeding fluids }
- B01F 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) }
- B01F 15/0206 { Breaking or perforating packages, containers, vials }
- B01F 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) }
- B01F 15/0208 { Opening clips which seal openings between the compartments }
- B01F 15/0209 { Dissolving the seal when in contact with one of the products to be mixed, thereby bringing the compartments in communication }
- B01F 15/021 { Opening the seal between the compartments by application of heat }
- B01F 15/0211 { Opening hooks which lock, close-off openings between compartments }
- B01F 15/0212 { Piercing, perforating, melting membranes, closures which seal the compartments }
- B01F 15/0213 { Opening valves which close-off openings between compartments }
- B01F 15/0215 { Removing separation walls, plugs which close off the different compartments, e.g. by rotation, axially sliding }
- B01F 15/0216 ... { for feeding predetermined amounts ([B01F 15/0441](#) takes precedence) }
- B01F 15/0217 { using measuring chambers moving between a loading and unloading position, e.g. reciprocating feed frames }
- B01F 15/0218 { rotating or oscillating about an axis }
- B01F 15/0219 { the measuring chambers being pockets on the circumference of a drum rotating about a horizontal axis with discharging by gravity }
- B01F 15/022 { the measuring chambers being channels extending between both front faces of a rotating cylinder or disc }
- B01F 15/0222 ... { characterized by the relative arrangement of the containers for feeding or mixing the components }
- B01F 15/0223 { the containers being connected coaxially before contacting the contents }
- B01F 15/0224 { A container being placed inside the other before contacting the contents }

B01F 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 }
B01F 15/0226	....	{ the containers being placed in parallel before contacting the contents }
B01F 15/0227	...	{ characterized by the means for feeding the components to the mixer }
B01F 15/0229	....	{ using belts }
B01F 15/023	....	{ using boxes, closable containers, sacks, carts }
B01F 15/0231	....	{ using buckets, cups, open containers }
B01F 15/0232	....	{ using capillary forces }
B01F 15/0233	....	{ using centrifugal forces }
B01F 15/0234	....	{ using gravity, e.g. from a hopper }
B01F 15/0235	.....	{ using a hopper }
B01F 15/0236	....	{ using grippers }
B01F 15/0237	....	{ using pistons, plungers, syringes }
B01F 15/0238	....	{ using pneumatic pressure, overpressure, gas or air pressure in a closed receptacle or circuit system }
B01F 15/0239	....	{ using propellers }
B01F 15/024	....	{ using means for feeding components in a pulsating or intermittent manner }
B01F 15/0241	.....	{ using electrical pulses }
B01F 15/0243	....	{ using pumps }
B01F 15/0244	.....	{ membrane pumps }
B01F 15/0245	.....	{ peristaltic pumps }
B01F 15/0246	.....	{ piezoelectric pumps }
B01F 15/0247	.....	{ piston pumps }
B01F 15/0248	.....	{ venturi pumps }
B01F 15/0249	....	{ using rakes, plain plates with raking movement }
B01F 15/025	....	{ using rollers }
B01F 15/0251	....	{ using helical screws }
B01F 15/0252	....	{ using shovels, scoops }
B01F 15/0253	....	{ using slides, vibrating tables }
B01F 15/0254	....	{ using sprayers, nozzles, jets }
B01F 15/0255	.....	{ using ink jet heads or cartridges, e.g. of the thermal bubble jet or piezoelectric type }
B01F 15/0256	....	{ Squeezing a flexible container }
B01F 15/0258	....	{ using vacuum, underpressure in a closed receptacle or circuit system }
B01F 15/0259	.....	{ using a syphon to create a suction of a component }
B01F 15/026	....	{ using valves, gates, orifices, openings }
B01F 15/0261	.....	{ being adjustable }
B01F 15/0262	....	{ using fans, turbines }
B01F 15/0263	....	{ using vibrations, e.g. standing waves, ultrasonic vibrations }
B01F 15/0264	....	{ With means for feeding the material with a fractal or tree-type distribution in a surface }
B01F 15/0265	....	{ using means for feeding one phase surrounded by another phase without mixing during the feeding }

- B01F 15/0266 .. { Discharge mechanism }
- B01F 15/0267 ... { Discharging by opening a gate, e.g. using discharge paddles }
- B01F 15/0268 { the gate carrying a stirrer acting as discharge pump }
- B01F 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 }
- B01F 15/0272 ... { Discharging at the upper side of the receptacle, e.g. by pressurising the liquid in the receptacle or by centrifugal force }
- B01F 15/0274 ... { characterized by the means for discharging the components from the mixer }
- B01F 15/0275 { using belts }
- B01F 15/0276 { using gravity }
- B01F 15/0277 { Discharging the components by overflow }
- B01F 15/0278 { using pistons or plungers }
- B01F 15/0279 { reciprocating in the mixing receptacle }
- B01F 15/028 { using pneumatic pressure, overpressure, gas pressure in a closed receptacle or circuit system }
- B01F 15/0281 { using means for discharging the mixture in a pulsating or intermittent manner }
- B01F 15/0282 { using electrical pulses }
- B01F 15/0283 { using pumps }
- B01F 15/0284 { using venturi pumps }
- B01F 15/0286 { using pushers }
- B01F 15/0287 { using slides }
- B01F 15/0288 { using a rotary discharge means, e.g. a screw beneath the receptacle ([B01F 15/0267](#) takes precedence) }
- B01F 15/0289 { using helical screws }
- B01F 15/029 { using squeezing means on a deformable container }
- B01F 15/0291 { using suction, vacuum, e.g. with a pipette }
- B01F 15/0292 { using valves, gates, orifices, openings }
- B01F 15/0293 { being adjustable }
- B01F 15/0294 { using fans or ventilators }
- B01F 15/0295 { using tilting or pivoting means for emptying the mixing receptacle }
- B01F 15/0296 { the mixing receptacle rotating in opposite directions for mixing and for discharging }
- B01F 15/0297 { using distributing means, e.g. manifold valves, multiple fittings for supplying the discharge components to a plurality of dispensing places }
- B01F 15/0298 .. { Preventing lumping, or comminuting lumps, during feeding or discharging, e.g. by means of vibrations, or by scrapers }

- B01F 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) }
- B01F 15/0404 .. { Forming mixtures with changing ratio or gradient }
- B01F 15/0408 .. { Adding a component to a mixture in response to a detected feature, e.g. density, radioactivity, consumed power, colour }
- B01F 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) }

B01F 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) }
B01F 15/042	....	{ with means for controlling the motor driving the pumps or the other dispensing mechanisms }
B01F 15/0425	...	{ Flow control by weighing }
B01F 15/0429	...	{ Flow control by valves, e.g. opening intermittently }
B01F 15/0433	....	{ the flow of one component operating the actuator of the valve, e.g. by deforming a membrane which operates de valve actuator }
B01F 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 }
B01F 15/0441	..	{ by feeding the components in predetermined amounts }
B01F 15/0445	...	{ by weighing, e.g. with automatic discharge }
B01F 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 }
B01F 15/0454	...	{ using measuring chambers, e.g. volumetric pumps, for feeding the substances (for amalgam mixers A61C 5/06 ; specially adapted for mixing plastic material B29B 7/60B2B2 , B29B 7/7626 ; for amalgam mixers A61C 5/06 ; 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) }
B01F 15/0458	....	{ involving controlling }
B01F 15/0462	....	{ using measuring chambers of the piston or plunger type (B01F 15/0475 takes precedence) }
B01F 15/0466	.....	{ with double acting pistons (B01F 15/047 takes precedence) }
B01F 15/047	.....	{ without external means for driving the piston, e.g. the piston being driven by one of the components }
B01F 15/0475	....	{ using diaphragms or bellows }
B01F 15/0479	...	{ using flow rate controls for feeding the substances }
B01F 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 to B01F 15/0441 take precedence) }
B01F 15/0487	...	{ the material after falling on a, e.g. rotatable, plate being wiped from this plate by means of a scraper }
B01F 15/0491	..	{ Measuring receptacles therefor }
B01F 15/0495	..	{ characterised by the build-up of the device }
B01F 15/06	.	Heating or cooling systems
B01F 15/063	..	{ using gas or liquid injected into the material, e.g. using liquefied C02 or steam }
B01F 15/065	..	{ using heating or cooling elements at the outside of the receptacle, e.g. heated jackets, burners, spraying devices }
B01F 15/066	..	{ using heating or cooling elements inside the receptacle }
B01F 15/067	..	{ using radiation or high frequency energy, e.g. microwaves or electromagnetic radiation }
B01F 15/068	..	{ using heated or cooled stirrers }
B01F 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 1/035](#); 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

- [B01F 17/0007](#) . { Inorganic compounds }
- [B01F 17/0014](#) . { Organic compounds containing only carbon and hydrogen }
- [B01F 17/0021](#) . { Organic compounds containing oxygen }
- [B01F 17/0028](#) .. { Macromolecular compounds }
- [B01F 17/0035](#) . { Organic compounds containing halogen }
- [B01F 17/0042](#) . { Organic compounds containing nitrogen }
- [B01F 17/005](#) .. { Macromolecular compounds }
- [B01F 17/0057](#) . { Organic compounds containing sulfur, selenium, or tellurium }
- [B01F 17/0064](#) . { Organic compounds containing phosphorus }
- [B01F 17/0071](#) . { Organic compounds containing silicon }
- [B01F 17/0078](#) . { Organic compounds not provided for in groups [B01F 17/0014](#) to [B01F 17/0071](#) }
- [B01F 17/0085](#) . { Mixtures of compounds }
- [B01F 17/0092](#) .. { Mixtures of 2 or more different organic oxygen-containing compounds }
- B01F 2001/00** **Dissolving** ({ without involving chemical reactions; [B01F 3/04099](#) takes precedence; } separating by dissolving [B01D](#) ; dissolving to effect cooling [F25D 5/00](#))
- [B01F 2001/0044](#) . characterized by the state of the material being dissolved
- [B01F 2001/005](#) .. Molten solids (mixing the melt [B01F 3/08](#))
- [B01F 2001/0055](#) .. characterised by the configuration, form or shape of the solid material, e.g. in the form of tablets, blocks
- [B01F 2001/0061](#) ... in the form of tablets stored in containers, canisters, receptacles
- [B01F 2001/0066](#) .. Solid carbon dioxide or dry ice
- [B01F 2001/0072](#) . Elements used for separating or keeping undissolved material in the mixer
- [B01F 2001/0077](#) .. Tablet canisters provided with perforated walls, sieves, grids or filters
- [B01F 2001/0083](#) .. Baffles
- [B01F 2001/0088](#) .. Filters
- [B01F 2001/0094](#) .. Sieves, i.e. perforated plates or walls

- B01F 2003/00** **Mixing, e.g. dispersing, emulsifying, according to the phases to be mixed { ([C08J 3/02](#) takes precedence) }**
- [B01F 2003/0007](#) . Maintaining the aggregation state of the mixed materials
- [B01F 2003/0014](#) .. Maintaining mixed ingredients in movement to prevent crystallisation of the ingredients after mixing
- [B01F 2003/0021](#) .. Preventing precipitation of solid ingredients during or after mixing by adding a solvent
- [B01F 2003/0028](#) .. Preventing sedimentation, conglomeration, agglomeration of solid ingredients during or after mixing by maintaining mixed ingredients in movement
- [B01F 2003/0035](#) .. Maintaining mixed ingredients in movement to prevent separation of the ingredients after mixing
- [B01F 2003/0042](#) . Specific aggregation state of one or more of the phases to be mixed
- [B01F 2003/005](#) .. Mixing ingredients in more than two different agglomeration states, phases
- [B01F 2003/0057](#) .. Mixing cryogenic aerosols, i.e. mixtures of gas with solid particles in cryogenic condition, with other ingredients
- [B01F 2003/0064](#) .. Mixing fluids or with fluids in a supercritical state, in supercritical conditions, variable density fluids
- [B01F 2003/0071](#) . Mixing phases by adding a very small quantity of one of the phases, microdosing
- [B01F 2003/0078](#) .. Adding a small quantity or concentration of an additional phase in a main phase, e.g. acting as a carrier phase
- [B01F 2003/0085](#) .. Mixing ingredients in very small quantity, adding microingredients, microconcentration, e.g. adding vitamins, minerals, proteins, enzymes, hormones, antibiotics, worm medicines
- [B01F 2003/04](#) . { [gases or vapours with liquids \(mixing non-alcoholic beverages with gases \[A23L 2/54\]\(#\); { for medical purposes \[A61M 16/14\]\(#\) } \) \[M1110\]](#) }
- [B01F 2003/04007](#) .. { [Introducing a liquid into a gaseous medium, e.g. preparation of aerosols \(for air-conditioning \[F24F 6/00\]\(#\) \) }](#)
- [B01F 2003/04092](#) ... by using liquefied or cryogenic gases as liquid component
- [B01F 2003/04099](#) .. { [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 \[B67D 1/0057\]\(#\), \[B67D 1/02B\]\(#\), \[B67D 1/04A\]\(#\), \[B67D 1/0418\]\(#\); 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 \[C12M 1/04\]\(#\) \) }](#)
- [B01F 2003/04106](#) ... { [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 \[B01F 13/02\]\(#\) \) }](#)
- [B01F 2003/04113](#) { [Arrangement or manipulation of the gas bubbling devices](#) }
- [B01F 2003/0412](#) { [Mounting the bubbling devices or the diffusers \(\[B01F 3/04241\]\(#\) takes precedence \) }](#)
- [B01F 2003/04127](#) comprising the use of flow guiding elements adjacent or above the gas stream
- [B01F 2003/04134](#) the flow guiding elements being baffles, tubes or walls

B01F 2003/04141	.....	the flow guiding elements being dome-shaped elements, i.e. for trapping air, e.g. cap-, umbrella-, inversed cone-shaped
B01F 2003/04148	.....	characterized by the disposition of the bubbling elements in particular configurations, patterns or arrays
B01F 2003/04156	.....	characterized by the way in which the different elements of the bubbling installation are mounted
B01F 2003/04163	.....	Mounting auxiliary devices, e.g. pumps, compressors in a particular place on the bubbling installation, e.g. under water
B01F 2003/0417	.....	Mounting the gas transporting elements, i.e. connections between conduits
B01F 2003/04177	.....	Mounting the bubbling elements, diffusers, e.g. on conduits, using connecting elements; Connections therefor
B01F 2003/04184	.....	characterized by the way in which the bubbling devices are mounted within the receptacle
B01F 2003/04191	.....	the bubbling devices being fixed, anchored in the bottom
B01F 2003/04198	.....	the bubbling devices being supported, e.g. on cables or laying on the bottom
B01F 2003/04205	.....	the bubbling devices being suspended on a supporting construction, i.e. not on a floating construction
B01F 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
B01F 2003/04219	.....	the bubbling devices floating and having a pendulum movement, going to and from, moving in alternating directions
B01F 2003/04226	.....	the bubbling devices floating and having a rotating movement around a central vertical axis
B01F 2003/04234	.....	Means for manipulating the bubbling constructions and/or elements, e.g. for raising or lowering them
B01F 2003/04241	.....	{ Diffusers }
B01F 2003/04276	.....	characterized by the way in which they are assembled or mounted; Fabricating the parts of the diffusers
B01F 2003/04283	.....	characterized by the shape of the diffuser element
B01F 2003/0429	.....	having a box- or bloc-shape, being in the form of aeration stones
B01F 2003/04297	.....	having disc shape
B01F 2003/04304	.....	having dome-, cap-, inversed cone-shape
B01F 2003/04312	.....	being in the form of plates, flat beams, flat membranes or films
B01F 2003/04319	.....	being tubes, tubular elements, cylindrical elements, set of tubes
B01F 2003/04326	.....	being in the form of rings or annular elements
B01F 2003/04333	.....	being axially stacked discs, rings, plates
B01F 2003/0434	.....	being helically wound, coiled and joined bands, wires
B01F 2003/04347	.....	being spirally wound, coiled tubes or spirally wound, coiled and joined bands, wires
B01F 2003/04354	.....	characterized by the nature of the diffuser gas outlet
B01F 2003/04361	.....	Perforations
B01F 2003/04368	.....	Slits, cut-out openings
B01F 2003/04375	.....	Screens, nets, grades, grids
B01F 2003/04382	.....	Fabric in the form of woven, knitted, braided, non-woven or

		flocculated fibers or filaments
B01F 2003/0439	.....	Pores
B01F 2003/04397	.....	Foam-like
B01F 2003/04404	.....	Dissolving, hollow fiber membranes
B01F 2003/04411	.....	having specific properties or elements attached thereto
B01F 2003/04418	.....	Made of or comprising a biocide
B01F 2003/04425	.....	Made of or comprising a material able to store a gas which is released when water flows through it
B01F 2003/04432	.....	Having elements to protect the parts of the diffusers, e.g. from clogging when not in use
B01F 2003/04531	...	{ 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) }
B01F 2003/04539	....	characterised by the introduction of the gas along the axis of the stirrer or along the stirrer elements
B01F 2003/04546	.....	through a hollow stirrer axis
B01F 2003/04553	.....	through a conduit surrounding the stirrer axis
B01F 2003/0456	.....	through a separate conduit substantially parallel with the stirrer axis
B01F 2003/04567	.....	through a hollow stirrer element
B01F 2003/04574	.....	through a hollow guide surrounding the stirrer element
B01F 2003/04581	.....	through a separate hollow guide substantially parallel with the stirrer element
B01F 2003/04624	....	characterised by the direction of introduction of the gas relative to the stirrer
B01F 2003/04631	.....	the gas moving along the axis of rotation
B01F 2003/04638	.....	the gas moving perpendicular to the axis of rotation
B01F 2003/04645	.....	the gas being sucked towards the rotating stirrer
B01F 2003/04652	.....	the gas being driven away from the rotating stirrer
B01F 2003/04659	....	characterised by the location of the place of introduction of the gas relative to the stirrer
B01F 2003/04666	.....	the gas being introduced in a guide tube surrounding at least partially the axis of the stirrer
B01F 2003/04673	.....	the gas being introduced under the stirrer
B01F 2003/0468	.....	the gas being introduced above the stirrer
B01F 2003/04687	.....	the gas being introduced between the stirrer elements
B01F 2003/04695	.....	at the stirrer axis
B01F 2003/04702	.....	at the stirrer elements
B01F 2003/04709	.....	the gas being introduced at the radial periphery of the stirrer
B01F 2003/04716	.....	the gas being introduced in front of the stirrer
B01F 2003/04723	.....	the gas being introduced behind the stirrer
B01F 2003/04787	...	{ 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) }
B01F 2003/04822	....	Using security elements, e.g. valves, for relieving overpressure
B01F 2003/04843	...	characterized by the gas being introduced or the material in which the gas is introduced

B01F 2003/04851	....	characterized by the gas being introduced
B01F 2003/04858	.....	in the form of microbubbles, e.g. to obtain aphrons
B01F 2003/04865	.....	Aerating, i.e. introducing oxygen containing gas in liquids
B01F 2003/04872	.....	Normal air
B01F 2003/04879	.....	Oxygen
B01F 2003/04886	.....	Ozone
B01F 2003/04893	.....	Carbonating liquids
B01F 2003/049	.....	Beverages
B01F 2003/04907	.....	Chlorine or chlorine containing gases
B01F 2003/04914	.....	Hydrogenating liquids
B01F 2003/04921	.....	Nitrogenating liquids
B01F 2003/04929	.....	Sulphurating liquids, e.g. introducing sulphur dioxide
B01F 2003/04936	.....	Introducing steam, damp in liquids
B01F 2003/04943	....	characterized by the material in which the gas is introduced
B01F 2003/0495	.....	Dispersion or a suspension
B01F 2003/04957	.....	Emulsion
B01F 2003/04964	.....	Melt, i.e. in a molten, heated solid
B01F 2003/04971	.....	Slurry
B01F 2003/06	.	gases or vapours with solids
B01F 2003/061	..	by introducing solids in gas volumes
B01F 2003/063	..	by introducing gases in solid materials, e.g. in masses of powder or particles
B01F 2003/065	...	by introducing steam, e.g. for wetting the solids
B01F 2003/066	..	by mixing in fluidised bed state
B01F 2003/08	.	liquids with liquids; Emulsifying { (B01F 13/0222 takes precedence; dispensing beverages on draught combined with mixing B67D 1/00F , B67D 1/0043) }
B01F 2003/0807	..	{ 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) }
B01F 2003/0823	...	characterized by the internal structure of the emulsion
B01F 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]
B01F 2003/083	....	Inversed-type emulsions
B01F 2003/0834	....	Micro-emulsions
B01F 2003/0838	....	Multiple emulsions, in particular double emulsion e.g. water in oil in water; Three-phase emulsion
B01F 2003/0842	....	Emulsions of oils, e.g. fuel, and water
B01F 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
B01F 2003/0849	...	Homogenizing a raw emulsion, making monodisperse or fine emulsions
B01F 2003/0884	..	characterised by the nature of the liquids
B01F 2003/0888	...	using liquefied or cryogenic gases
B01F 2003/0892	...	using molten solids
B01F 2003/0896	...	Using water for diluting a liquid ingredient, obtaining a predetermined

- concentration or making an aqueous solution of a concentrate
- B01F 2003/10 . . Mixing very viscous liquids
- B01F 2003/105 . . . using a very viscous liquid and a liquid of low viscosity
- B01F 2003/12 . liquids with solids ({ [B01F 1/00](#) takes precedence; } [displacing one liquid by another in dispersions of solids in liquids B01D 12/00](#))
- B01F 2003/125 . . by introducing, e.g. dispersing, dissolving, solids in liquids
- B01F 2003/1257 . . by introducing liquids in solid material, e.g. to obtain slurries
- B01F 2003/1264 . . . by introducing liquids in a fluidised bed
- B01F 2003/1278 . . characterized by the nature of the liquid
- B01F 2003/1285 . . . Mixing liquids with solids, slurries, sludge, for obtaining a diluted slurry
- B01F 2003/1292 . . . Mixing foam with solids
- B01F 2005/00** **Flow mixers ([sprayers](#), [atomisers B05B](#)); Mixers for falling materials, e.g. solid particles ([B01F 13/04](#) takes precedence; [centrifugal mixers B04](#))**
- B01F 2005/0002 . Direction of flow or arrangement of feed and discharge openings
- B01F 2005/0005 . . Axial flow
- B01F 2005/0008 . . Radial flow
- B01F 2005/0011 . . . from the center to the circumference, i.e. centrifugal flow
- B01F 2005/0014 . . . from the circumference to the center
- B01F 2005/0017 . . Vortex flow, i.e. flow spiraling in a tangential direction and moving in an axial direction
- B01F 2005/002 . . Tangential flow, i.e. flow spiraling in a tangential direction in a flat plane or beltlike area
- B01F 2005/0022 . . Reverse flow, i.e. flow changing substantially 180° in direction
- B01F 2005/0025 . . Turbulent flow, i.e. every point of the flow moves in random direction and intermixes
- B01F 2005/0028 . . Laminar or parallel flow, i.e. every point of the flow moves in layers which do not intermix
- B01F 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
- B01F 2005/0034 . . Counter current flow, i.e. flows moving in opposite direction and colliding
- B01F 2005/0037 . . Characterised by the disposition of the feed and discharge openings
- B01F 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
- B01F 2005/0042 with feed openings in the center of the main flow
- B01F 2005/0045 with feed openings at the circumference of the main flow
- B01F 2005/0048 with feed openings around the complete circumference of the main flow, e.g. being a perforated or porous part
- B01F 2005/0051 with feed openings in the center and at the circumference of the main flow
- B01F 2005/0054 with feed openings facing each other, e.g. for creating counter flows, for creating a series of vortex flows
- B01F 2005/0088 . Arrangement, nature or configuration of flow guiding elements

B01F 2005/0091	..	Flow guiding elements surrounding feed openings, e.g. jet nozzles
B01F 2005/0094	..	Nature of the flow guiding elements
B01F 2005/0097	...	Surface characteristics, e.g. coated, rough
B01F 2005/04	.	Injector mixers, { i.e. one or more components being added to a flowing main component (B01F 5/0057 takes precedence) }
B01F 2005/0403	..	{ Mixing conduits or tubes, i.e. conduits or tubes through which the main component is flown (mixing devices for gas burners F23D 14/62) }
B01F 2005/0413	...	{ provided with a venturi element }
B01F 2005/0431	....	characteristics of the Venturi parts
B01F 2005/0433	.....	Core
B01F 2005/0435	.....	Adjustable Venturi core in the nozzle
B01F 2005/0436	.....	Profiled, grooved, ribbed core, or being provided with baffles
B01F 2005/0438	.....	Nozzle
B01F 2005/044	.....	Adjustable Venturi nozzle
B01F 2005/0441	.....	Profiled, grooved, ribbed nozzle, or being provided with baffles
B01F 2005/0443	.....	Discharge
B01F 2005/0445	.....	Adjustable discharge conduit or barrel, e.g. adjustable in width
B01F 2005/0446	.....	Profiled, grooved, ribbed discharge conduit, or being provided with baffles
B01F 2005/0448	.....	Constructional characteristics of the diverging discharge conduit or barrel, e.g. with zones of changing conicity
B01F 2005/06	.	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)
B01F 2005/0602	..	{ 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) }
B01F 2005/0609	...	{ Mixing tubes, e.g. the material being submitted to a substantially radial movement or to a movement partially in reverse direction }
B01F 2005/061	....	{ 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) }
B01F 2005/062	.....	characterised by the configuration of the baffles or obstructions
B01F 2005/0621	.....	Profiled elements, e.g. profiled blades, bars, pillars, columns or chevrons
B01F 2005/0622	.....	Profiled blades, wings, wedges, i.e. plate-like element having one side or part thicker than the other
B01F 2005/0623	.....	Profiles, pillars, chevrons, i.e. long elements having a polygonal cross-section
B01F 2005/0625	.....	Substantially flat elements, e.g. flat plates or blades
B01F 2005/0626	.....	Assembled flat elements
B01F 2005/0627	.....	in the form of small flat plate-like elements
B01F 2005/0628	.....	Folded or bent blades or strips
B01F 2005/0629	.....	Helically bent blades or strips
B01F 2005/063	.....	Ring-shaped blades or strips

B01F 2005/0631	.....	Tubular elements
B01F 2005/0632	.....	Wires or coils
B01F 2005/0633	.....	Spirally-shaped baffle
B01F 2005/0634	.....	Conical or pyramidal elements
B01F 2005/0635	.....	characterised by the mounting of the baffles or obstructions
B01F 2005/0636	.....	Mounted on the wall
B01F 2005/0637	.....	Mounted on an axial support member, e.g. a rod or bar
B01F 2005/0638	.....	Mounted on a support member extending transversally through the mixing tube
B01F 2005/0639	.....	Support members, e.g. tubular collars, with projecting baffles fitted inside the mixing tube or adjacent to the inner wall

B01F 2009/00 **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 }**

B01F 2009/0056	.	Constructional aspects of the rotating receptacles
B01F 2009/0058	..	Disposition of the rotor axis
B01F 2009/0059	...	horizontal
B01F 2009/0061	...	vertical
B01F 2009/0063	...	inclined
B01F 2009/0065	...	variable, e.g. tiltable during the operation
B01F 2009/0067	...	with a receptacle rotating around two or more axes
B01F 2009/0069	....	having different, non-perpendicular inclinations, e.g. skew axes
B01F 2009/007	....	being parallel axes
B01F 2009/0072	....	being perpendicular axes
B01F 2009/0074	....	arranged for planetary motion
B01F 2009/0076	...	with a plurality of rotating receptacles
B01F 2009/0078	....	having axes of different, non-perpendicular inclinations
B01F 2009/0079	....	having parallel axes
B01F 2009/0081	....	having perpendicular axes
B01F 2009/0083	....	being concentrically arranged
B01F 2009/0085	....	arranged for planetary motion
B01F 2009/0087	..	Disposition or configuration of the receptacles
B01F 2009/0089	...	Multi-compartment receptacles
B01F 2009/009	...	Configuration of the interior
B01F 2009/0092	....	provided with baffles, plates or bars on the wall or the bottom
B01F 2009/0094	....	provided with guide tubes on the wall or the bottom
B01F 2009/0096	...	Nature of the receptacle
B01F 2009/0098	....	Surface characteristics, e.g. coated, rough

B01F 2013/00 **Other mixers; Mixing plant, including combinations of { mixers, e.g. of } dissimilar mixers**

- B01F 2013/10 . Mixing plant, including combinations of { mixers, e.g. of } dissimilar mixers { ([B01F 13/0294](#) takes precedence) }
- B01F 2013/1052 .. Mixing in several steps, e.g. successive steps
- B01F 2013/1075 .. combining mixing with other treatments
- B01F 2013/1077 ... with disintegrating
- B01F 2013/108 by cutting
- B01F 2013/1083 by crushing or breaking
- B01F 2013/1086 by grinding or milling
- B01F 2013/1088 and irradiating
- B01F 2013/1091 ... with chemical reactions
- B01F 2013/1094 ... with coating
- B01F 2013/1097 ... with drying

- B01F 2015/00** **Accessories for mixers; { Auxiliary operations or auxiliary devices; Parts or details of general application }**

- B01F 2015/00077 . Use of general mechanical engineering elements in mixing devices
- B01F 2015/00084 .. Sealings
- B01F 2015/0009 ... for laboratory mixers
- B01F 2015/00097 ... Fluid sealings, e.g. using liquids or air under pressure which is leaking into the mixing receptacle
- B01F 2015/00103 ... comprising a stationary member in frontal contact with a movable member
- B01F 2015/0011 .. Bearings
- B01F 2015/00116 .. Lubricating systems

- B01F 2015/00435 . { Drives, e.g. for reciprocating motion; Transmissions; Brakes; Couplings ([B01F 15/00201](#), [B01F 15/00668](#) take precedence; drives using magnetic couplings [B01F 13/08](#)) }
- B01F 2015/00577 .. Disposition of the drive
- B01F 2015/00584 ... independent from the receptacle
- B01F 2015/0059 ... mounted on the receptacle
- B01F 2015/00597 ... at the lower side of the axis, e.g. driving the stirrer from the bottom of a receptacle
- B01F 2015/00603 ... at the upper side of the axis, e.g. driving the stirrer from the top of a receptacle
- B01F 2015/0061 ... the driving system comprising more than one motor, e.g. having an auxiliary motor or comprising independently driven elements
- B01F 2015/00616 Driving the stirrer axis from both ends of the axis, i.e. using at least two motors per shaft
- B01F 2015/00623 .. Transmissions
- B01F 2015/00629 ... the transmission alternately changes the speed of rotation
- B01F 2015/00636 ... the transmission alternately changes the direction of rotation
- B01F 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
- B01F 2015/00649 .. Couplings
- B01F 2015/00655 .. Brake mechanisms

- B01F 2015/00662 . { 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 }
- B01F 2015/00733 . . { Clamping or holding arrangements for mounting receptacles on mixing devices, e.g. for shaking, vibrating or rotating the receptacle }
- B01F 2015/00759 . . . by means of an air cushion used for supporting the mixing receptacle
- B01F 2015/02 . Feed or discharge mechanisms
- B01F 2015/0201 . . { Feed mechanisms (with proportioning [B01F 15/04](#)) }
- B01F 2015/0204 . . . { using screws, transporting belts or hoppers }
- B01F 2015/0221 . . . Feeding the components in several steps, e.g. successive steps
- B01F 2015/0266 . . { Discharge mechanism }
- B01F 2015/0269 . . . { using a rotary discharge means, e.g. a screw beneath the receptacle ([B01F 15/0267](#) takes precedence) }
- B01F 2015/0273 . . . { using a piston reciprocating in the mixing receptacle }
- B01F 2015/06 . Heating or cooling systems
- B01F 2015/061 . . Cooling
- B01F 2015/062 . . Heating
- B01F 2201/00** **Dissolving gases**
- B01F 2201/01 . To-be-deteled with administrative transfer to parent group
- B01F 2215/00** **Auxiliary or complementary information in relation with mixing**
- B01F 2215/0001 . Field of application of the mixing device
- B01F 2215/0003 . . Mixing or agitating manure, dung (storage of manure with mixing or agitation devices [A01C 3/026](#))
- B01F 2215/0004 . . Mixing or agitating during harvesting or moving, e.g. mixing with solid harvested products or particles (harvesting or mowing [A01D](#))
- B01F 2215/0006 . . Mixing or aerating milk or cream ingredients (ice-cream [B01F 2215/0021](#); homogenising milk [A01J 11/16](#))
- B01F 2215/0008 . . Mixing cattle, poultry, stock or game food, possibly combined with distribution (fodder distributors with mixer or shredder [A01K 5/001](#))
- B01F 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](#))
- B01F 2215/0011 . . Mixing dough
- B01F 2215/0013 . . Mixing cereals, grains, seeds materials (treatment of foods [A23](#))
- B01F 2215/0014 . . Mixing food ingredients (treatment of foods [A23](#))
- B01F 2215/0016 . . Mixing butter, margarine ingredients (treatment of dairy products [A23C](#))
- B01F 2215/0018 . . Mixing cheese ingredients (treatment of dairy products [A23C](#))
- B01F 2215/0019 . . Mixing chocolate ingredients (mixing of cocoa or cocoa products [A23G 1/0026](#))
- B01F 2215/0021 . . Mixing ice-cream ingredients (milk or cream [B01F 2215/0006](#); production of ice-cream [A23G 9/04](#))

- B01F 2215/0022 .. Mixing beverage ingredients for non-alcoholic beverages; Dissolving sugar in water ([preparation or treatment of foodstuffs A23L](#))
- B01F 2215/0024 .. Mixing animal food ingredients ([B01F 2215/0008](#) takes precedence; apparatus for preparing animal feeding-stuffs [A23N 17/00](#))
- B01F 2215/0026 .. Kitchen, household equipment for mixing ([mixing equipment for kitchen and household, kitchen equipment A47J](#))
- B01F 2215/0027 .. Mixing dentistry compositions ([dentistry A61C](#))
- B01F 2215/0029 .. Mixing ingredients for bone cement ([tools for mixing bone cement A61B 17/8802](#))
- B01F 2215/0031 .. Mixing ingredients for cosmetic, perfume compositions ([mixtures with detergents for washing machines B01F 2215/0077](#); cosmetics or toilet preparations [A61K 7/00](#))
- B01F 2215/0032 .. Mixing ingredients for pharmaceutical, homeopathical compositions
- B01F 2215/0034 .. Mixing compositions and mixers in the medical or veterinary field ([preparation of medical media for introduction into, or onto, the body A61M](#))
- B01F 2215/0036 .. Mixing chemical components in general, chemical components in order to improve chemical treatment, reactions, independently from the specific application
- B01F 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](#))
- B01F 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](#))
- B01F 2215/004 .. Mixing ingredients for cleaning compositions, during cleaning operations ([cleaning in general B08B](#))
- B01F 2215/0042 .. Mixing waste with other ingredients ([disposal of solid waste B09](#))
- B01F 2215/0044 .. Mixing ingredients for casting metals ([mixing in metallurgical processes in general B01F 2215/0075](#); casting of metals [B22D](#))
- B01F 2215/0045 .. Mixing ingredients for grinding, polishing, lapping ([grinding, polishing B24](#))
- B01F 2215/0047 .. Mixing cement, mortars, clay, plaster or concrete ingredients
- B01F 2215/0049 .. Mixing plastics, polymer material ingredients, monomers or oligomers ([hot melt adhesives see B01F 2215/0062](#))
- B01F 2215/005 .. Mixing paints, paint ingredients, e.g. pigments, dyes, colours, lacquer-, enamel ingredients ([implements for stirring or mixing paints B44D 3/06](#))
- B01F 2215/0052 .. Treatment of water, waste water or sewage ([treatment of water, waste water, sewage or sludge C02F](#))
- B01F 2215/0054 .. Mixing compost ingredients or organic waste for preparing fertilizers ([organic fertilizers C05F](#))
- B01F 2215/0055 .. Mixing fertilizer ingredients from other sources than compost or organic waste ([fertilizers C05](#))
- B01F 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](#))
- B01F 2215/0059 .. Mixing inks, toner ([ink agitators B41F 31/03](#); [inks C09D 11/00](#))
- B01F 2215/006 .. Mixing adhesives ingredients; glues; adhesive and gas ([mixing ingredients of hot-melt adhesives B01F 2215/0062](#); [adhesives C09J](#))
- B01F 2215/0062 .. Mixing ingredients of hot-melt adhesives; hot-melt adhesive and gas ([adhesives C09J](#))
- B01F 2215/0063 .. Mixing asphalt, bitumen, tar or pitch or their ingredients ([working-up pitch, asphalt,](#)

- bitumen [C10C](#))
- B01F 2215/0065 .. Mixing ingredients for grease, lubricating compositions ([lubricating compositions C10M](#))
- B01F 2215/0067 .. Mixing ingredients for oils, fats or waxes ([producing, refining and preserving fats, fatty substances, waxes C11B](#))
- B01F 2215/0068 .. Mixing beer or the ingredients therefore ([brewing of beer C12C](#))
- B01F 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](#))
- B01F 2215/0072 .. Aeration of wine prior to consumption ([wine, other alcoholic beverages C12G](#))
- B01F 2215/0073 .. Mixing ingredients for microbiology, enzymology, in vitro culture, genetic manipulation ([apparatus for microbiology or enzymology C12M](#))
- B01F 2215/0075 .. Mixing in metallurgical processes of ferrous or non ferrous materials ([for casting metal B01F 2215/0044](#); [metallurgy of iron C21](#) ; [metallurgy C22](#))
- B01F 2215/0077 .. Mixing ingredients comprising detergents, soaps, for washing, e.g. washing machines ([laundering, drying of textile articles D06F](#))
- B01F 2215/0078 .. Mixing ingredients for paper pulp, e.g. wood fibres, wood pulp ([paper making, production of cellulose D21](#))
- B01F 2215/008 .. Mixing water with other ingredients, e.g. air, detergents, disinfectants, in water-taps ([domestic plumbing installations E03C](#))
- B01F 2215/0081 .. Mixing ingredients for well-, earth-, deep drilling compositions or drilled material with liquids to obtain slurries ([compositions for drilling C09K8](#); [earth drilling E21B](#))
- B01F 2215/0083 .. Mixing mined ingredients and liquid to obtain slurries ([mining or quarrying E21C](#))
- B01F 2215/0085 .. Mixing combustion ingredients, e.g. gases, for burners or combustion chambers ([feeding or distributing fuel to combustion apparatus F23K 5/00](#))
- B01F 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](#))
- B01F 2215/009 .. Aromatizing, smell generation, sense simulation by introducing liquid in gas or air
- B01F 2215/0091 .. Introducing liquid in air for air humidification
- B01F 2215/0093 .. Mixing photosensitive chemicals, photographic base materials ([photosensitive materials for photographic purposes G03C](#))
- B01F 2215/0095 .. Mixing nuclear, radioactive materials ([nuclear physics and engineering G21](#))
- B01F 2215/0096 .. Mixing during semiconductor or wafer manufacturing processes ([semiconductor devices H01L](#))
- B01F 2215/0098 .. Mixing reaction ingredients for fuel cells ([fuel cells H01M 8/00](#))
- B01F 2215/04 . Technical information in relation with mixing
- B01F 2215/0404 .. theories or general explanations of phenomena associated with mixing or generalizations of a concept by comparison of equivalent methods
- B01F 2215/0409 .. Relationships between different variables defining features or parameters of the apparatus or process
- B01F 2215/0413 .. Numerical information
- B01F 2215/0418 ... Geometrical information
- B01F 2215/0422 Numerical values of angles

B01F 2215/0427	....	Numerical distance values, e.g. separation, position
B01F 2215/0431	....	Numerical size values, e.g. diameter of a hole or conduit, area, volume, length, width, or ratios thereof
B01F 2215/0436	...	Operational information
B01F 2215/044	....	Numerical composition values of components or mixtures, e.g. percentage of components
B01F 2215/0445	....	Numerical electrical values, e.g. intensity, voltage
B01F 2215/045	....	Numerical flow-rate values
B01F 2215/0454	....	Numerical frequency values
B01F 2215/0459	....	Numerical values of dimensionless numbers, i.e. Re, Pr, Nu, transfer coefficients
B01F 2215/0463	....	Numerical power values
B01F 2215/0468	....	Numerical pressure values
B01F 2215/0472	....	Numerical temperature values
B01F 2215/0477	....	Numerical time values
B01F 2215/0481	....	Numerical speed values
B01F 2215/0486	...	Material property information
B01F 2215/049	....	Numerical values of density of substances
B01F 2215/0495	....	Numerical values of viscosity of substances