B03C  COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING
(NOTES omitted)

SEPARATING; MIXING

B03 SEPARATION OF SOLID MATERIALS USING LIQUIDS OR USING PNEUMATIC TABLES OR JIGS; MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS

B03C MAGNETIC OR ELECTROSTATIC SEPARATION OF SOLID MATERIALS FROM SOLID MATERIALS OR FLUIDS; SEPARATION BY HIGH-VOLTAGE ELECTRIC FIELDS (filters making use of electricity or magnetism B01D 35/06; separating isotopes B01D 59/00; combinations of magnetic or electrostatic separation with separation of solids by other means B03B, B07B; separating sheets from piles B65H 3/00; magnets or magnet coils per se H01F)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 Magnetic separation
1/002 . . . [High gradient magnetic separation]
1/005 . . . Pretreatment specially adapted for magnetic separation
1/01 . . . by addition of magnetic adjuvants
1/015 . . . by chemical treatment imparting magnetic properties to the material to be separated, e.g. roasting, reduction, oxidation
1/02 . . . acting directly on the substance being separated
1/021 . . . Separation using Meissner effect, i.e. deflection of superconductive particles in a magnetic field
1/023 . . . Separation using Lorentz force, i.e. deflection of electrically charged particles in a magnetic field
1/025 . . . High gradient magnetic separators
1/027 . . . with reciprocating canisters
1/029 . . . with circulating matrix or matrix elements (matrix elements B03C 1/034)
1/03 . . . . rotating, e.g. of the carousel type
1/031 . . . Component parts; Auxiliary operations
1/032 . . . Matrix cleaning systems
1/033 . . . characterised by the magnetic circuit
1/0332 . . . . {using permanent magnets}
1/0335 . . . . {using coils}
1/0337 . . . . . . . {superconductive}
1/034 . . . . . . . characterised by the matrix elements
1/035 . . . Open gradient magnetic separators, i.e. separators in which the gap is unobstructed, characterised by the configuration of the gap
1/0355 . . . . using superconductive coils
1/04 . . . with the material carriers in the form of trays or with tables
1/06 . . . . with magnets moving during operation
1/08 . . . . with non-movable magnets
1/10 . . . with cylindrical material carriers (B03C 1/247 takes precedence)
1/12 . . . . with magnets moving during operation; with movable pole pieces
1/14 . . . . with non-movable magnets
1/145 . . . . . [with rotating annular or disc-shaped material carriers]
1/16 . . . . with material carriers in the form of belts
1/18 . . . . with magnets moving during operation
1/20 . . . . . in the form of belts, e.g. cross-belt type
1/22 . . . . . with non-movable magnets
1/23 . . . . with material carried by oscillating fields; with material carried by travelling fields, e.g. generated by stationary magnetic coils; Eddy-current separators, e.g. sliding ramp
1/24 . . . . with material carried by travelling fields
1/247 . . . . . obtained by a rotating magnetic drum
1/253 . . . . . obtained by a linear motor
1/26 . . . . with free falling material (B03C 1/035 takes precedence)
1/28 . . . Magnetic plugs and dipsticks
1/282 . . . . . [with associated accumulation indicator, e.g. Hall sensor]
1/284 . . . . . {with associated cleaning means, e.g. retractable non-magnetic sleeve}
1/286 . . . . . (disposed at the inner circumference of a recipient, e.g. magnetic drain bolt)
1/288 . . . . . (disposed at the outer circumference of a recipient)
1/30 . . . . Combinations with other devices, not otherwise provided for
1/32 . . . acting on the medium containing the substance being separated, e.g. magnetogravimetric-, magnetohydrostatic-, or magnetohydrodynamic separation ([sink-float separation using heavy liquids or suspensions B03B 5/30])
Separating dispersed particles from gases or vapour, e.g. air, by electrostatic effect \( \{ \text{use of electrostatic separators in combination with exhausts of machines or internal combustion machines B01N 3/01(1)} \)  

3/01 . Pretreatment of the gases prior to electrostatic precipitation  
3/011 . Prefiltering; Flow controlling  
3/013 . Conditioning by chemical additives, e.g. with SO\textsubscript{3}  
3/014 . Addition of water; Heat exchange, e.g. by condensation  
3/016 . by acoustic or electromagnetic energy, e.g. ultraviolet light  
3/017 . Combinations of electrostatic separation with other processes, not otherwise provided for  
3/0175 . \{ Amassing particles by electric fields, e.g. agglomeration \}  
3/019 . Post-treatment of gases  
3/02 . Plant or installations having external electricity supply (electrode constructions B03C 3/40)  
3/025 . \{ Combinations of electrostatic separators, e.g. in parallel or in series, stacked separators, dry-wet separator combinations \}  
3/04 . dry type  
3/06 . \{ Characterised by presence of stationary tube electrodes \}  
3/08 . \{ Characterised by presence of stationary flat electrodes arranged with their flat surfaces parallel to the gas stream \}  
3/09 . \{ Characterised by presence of stationary flat electrodes arranged with their flat surfaces at right angles to the gas stream \}  
3/10 . \{ Characterised by presence of electrodes moving during separating action \}  
3/12 . \{ Characterised by separation of ionising and collecting stations \}  
3/14 . \{ Characterised by the additional use of mechanical effects, e.g. gravity (B03C 3/32 takes precedence) \}  
3/145 . \{ Inertia \}  
3/15 . \{ Centrifugal forces \}  
3/155 . \{ Filtration \}  
3/16 . \{ Wet type \}  
3/28 . Plant or installations without electricity supply, e.g. using electrets  
3/30 . \{ In which electrostatic charge is generated by passage of the gases, i.e. tribo-electricity \}  
3/32 . \{ Transportable units, e.g. for cleaning room air (room air-conditioners having an electrostatic separating stage F24F) \}  
3/34 . \{ Constructional details or accessories or operation thereof \}  
3/36 . \{ Controlling flow of gases or vapour \}  
3/361 . \{ By static mechanical means, e.g. deflector \}  
3/363 . \{ Located before the filter \}  
3/365 . \{ Located after the filter \}  
3/366 . \{ Located in the filter, e.g. special shape of the electrodes \}  
3/368 . \{ By other than static mechanical means, e.g. internal ventilator or recycler \}  
3/38 . \{ Particle charging or ionising stations, e.g. using electric discharge, radioactive radiation, flames (electrode constructions B03C 3/40; ionising gases H05H) \}  
3/383 . \{ Using radiation \}  
3/386 . \{ Using flames \}  
3/40 . \{ Electrode constructions \}  
3/41 . \{ Ionising-electrodes \}  
3/43 . \{ Radioactive \}  
3/45 . \{ Collecting-electrodes \}  
3/455 . \{ Specially adapted for heat exchange with the gas stream (B03C 3/53 takes precedence) \}  
3/47 . \{ Flat, e.g. plates, discs, gratings \}  
3/49 . \{ Tubular (B03C 3/45 takes precedence) \}  
3/51 . \{ Catch- space electrodes, e.g. slotted-box form \}  
3/53 . \{ Liquid, or liquid-film, electrodes \}  
3/60 . \{ Use of special materials other than liquids \}  
3/62 . \{ Ceramics \}  
3/64 . \{ Synthetic resins \}  
3/66 . \{ Applications of electricity supply techniques \}  
3/68 . \{ Control systems therefor \}  
3/70 . \{ Insulating in electric separators (B03C 3/53 takes precedence) \}  
3/72 . \{ Emergency control systems \}  
3/74 . \{ Cleaning the electrodes \}  
3/743 . \{ By using friction, e.g. by brushes or sliding elements \}  
3/746 . \{ Electricity supply or control systems therefor \}  
3/76 . \{ By using a mechanical vibrator, e.g. rapping gear \}  
3/761 . \{ Drive-transmitting devices therefor, e.g. insulated shafts \}  
3/763 . \{ Electricity supply or control systems therefor \}  
3/765 . \{ With electromagnetic rappers \}  
3/766 . \{ With pneumatic rappers \}  
3/768 . \{ With free falling masses, e.g. dropped metal balls \}  
3/78 . \{ By washing \}  
3/80 . \{ By gas or solid particle blasting \}  
3/82 . \{ Housings \}  
3/84 . \{ Protective coatings \}  
3/86 . \{ Electrode-carrying means (B03C 3/40 takes precedence) \}  
3/88 . \{ Cleaning-out collected particles \}  
3/885 . \{ By travelling or oscillating electric fields, e.g. electric field curtains (electrostatic non-mechanical conveyors in general B65G 54/02) \}  

Separating dispersed particles from liquids by electrostatic effect \( \{ \text{flocculation or agglomeration of electric particles induced by electric field B01D 21/0009; microreactors B01J 19/0093}; \) combined with centrifuges B04B 5/10 \( ; \) treatment of microorganisms and apparatus therefor C12M 1/42, C12N 3/00, C12Q 1/24; analysis of biomaterial by electrical means G01N 33/48707 \) \})  

\textbf{NOTE}  
In this group, the following term is used with the meaning indicated:  
\begin{itemize}  
\item "separating" means dimensional modifications of particle-liquid distributions, e.g. particle immobilisation, caging, translational or rotational motion  
\end{itemize}
B03C

5/005  .  (Dielectrophoresis, i.e. dielectric particles migrating towards the region of highest field strength
   (B03C 5/02 takes precedence; electrophoresis
   B01D 5/702))

5/02  .  Separators
5/022  .  .  (Non-uniform field separators)
5/024  .  .  .  {using high-gradient differential dielectric separation, i.e. using a dielectric matrix
   polarised by an external field}
5/026  .  .  .  {using open-gradient differential dielectric separation, i.e. using electrodes of special
   shapes for non-uniform field creation, e.g. Fluid Integrated Circuit [FIC]}
5/028  .  .  .  {using travelling electric fields, i.e. travelling wave dielectrophoresis [TWD]}

7/00  Separating solids from solids by electrostatic effect
7/003  .  (Pretreatment of the solids prior to electrostatic separation)
7/006  .  (Charging without electricity supply, e.g. by tribo-electricity, pyroelectricity)
7/02  .  Separators
7/023  .  .  (Non-uniform field separators)
7/026  .  .  .  {using travelling or oscillating electric fields}
7/04  .  .  with material carriers in the form of trays, troughs, or tables
7/06  .  .  with cylindrical material carriers
7/08  .  .  with material carriers in the form of belts
7/10  .  .  with material falling in cascades
7/12  .  .  with material falling free

9/00  Electrostatic separation not provided for in a single preceding main group

11/00  Separation by high-voltage electrical fields, not provided for in other groups of this subclass

2201/00  Details of magnetic or electrostatic separation
2201/02  .  Electro-statically separating liquids from liquids
2201/04  .  Ionising electrode being a wire
2201/06  .  Ionising electrode being a needle
2201/08  .  Ionising electrode being a rod
2201/10  .  Ionising electrode has multiple serrated ends or parts
2201/12  .  Cleaning the device by burning the trapped particles
2201/14  .  the gas being moved electro-kinetically
2201/16  .  Magnetic separating gases form gases, e.g. oxygen from air
2201/18  .  Magnetic separation whereby the particles are suspended in a liquid
2201/20  .  Magnetic separation whereby the particles to be separated are in solid form
2201/22  .  characterised by the magnetic field, special shape or generation
2201/24  .  for measuring or calculating parameters, efficiency, etc.
2201/26  .  for use in medical applications
2201/28  .  Parts being easily removable for cleaning purposes
2201/30  .  for use in or with vehicles
2201/32  .  Checking the quality of the result or the well-functioning of the device