CPC  COOPERATIVE PATENT CLASSIFICATION

B  PERFORMING OPERATIONS; TRANSPORTING
(NOTES omitted)

SEPARATING; MIXING

B04  CENTRIFUGAL APPARATUS OR MACHINES FOR CARRYING-OUT PHYSICAL OR CHEMICAL PROCESSES

B04B  CENTRIFUGES (high-speed drum mills B02C 19/11; domestic spin driers D06F; analysing, measuring or monitoring physical or chemical properties of samples during centrifuging, see the relevant subclasses for these procedures, e.g. G01N)

NOTE
This subclass covers machines or apparatus for separating, mixing, drying, extracting, purifying, or like treating in which centrifugal effects are generated by rotary bowls or other rotors. Where such machines or apparatus involve pumping effects, such effects must be incidental or subsidiary to the treating.

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.

Types of centrifuges: Centrifuges characterised by discharging means

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>1/00</td>
<td>Centrifuges with rotary bowls provided with solid jackets for separating predominantly liquid mixtures with or without solid particles</td>
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<tr>
<td>1/02</td>
<td>without inserted separating walls</td>
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<tr>
<td>1/04</td>
<td>with inserted separating walls</td>
</tr>
<tr>
<td>1/06</td>
<td>of cylindrical shape</td>
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<tr>
<td>1/08</td>
<td>of conical shape</td>
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<tr>
<td>1/10</td>
<td>with discharging outlets in the plane of the maximum diameter of the bowl</td>
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<tr>
<td>1/12</td>
<td>with continuous discharge</td>
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<tr>
<td>1/14</td>
<td>with periodic discharge</td>
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<tr>
<td>1/16</td>
<td>with discharging outlets controlled by the rotational speed of the bowl</td>
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<tr>
<td>1/18</td>
<td>controlled by the centrifugal force of an auxiliary liquid</td>
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<tr>
<td>1/20</td>
<td>discharging solid particles from the bowl by a conveying screw coaxial with the bowl axis and rotating relatively to the bowl</td>
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<tr>
<td>1/208</td>
<td>(with an abrasion-resistant conveyor or drum)</td>
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<tr>
<td>1/2016</td>
<td>(Driving control or mechanisms; Arrangement of transmission gearing)</td>
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</tbody>
</table>

2001/2025  .  .  (with drive comprising a planetary gear)
2001/2033  .  .  (with feed accelerator inside the conveying screw)
2001/2041  .  .  (with baffles, plates, vanes or discs attached to the conveying screw)
2001/205  .  .  (with special construction of screw thread, e.g. segments, height)
2001/2058  .  .  (with ribbon-type screw conveyor)
2001/2066  .  .  (with additional disc stacks)
2001/2075  .  .  (with means for recovering the energy of the outflowing liquid)
2001/2083  .  .  (Configuration of liquid outlets)

2001/2091  .  .  (Configuration of solids outlets)

3/00  Centrifuges with rotary bowls in which solid particles or bodies become separated by centrifugal force and simultaneous sifting or filtering

3/02  .  discharging solid particles from the bowl by means coaxial with the bowl axis and moving to and fro, i.e. push-type centrifuges
3/025  .  (with a reversible filtering device)
3/04  .  discharging solid particles from the bowl by a conveying screw coaxial with the bowl axis and rotating relatively to the bowl
3/06  .  discharging solid particles by vibrating the bowl
3/08  .  discharging solid particles by bowl walls in the form of endless bands

5/00  Other centrifuges

5/005  .  [Centrifugal separators or filters for fluid circulation systems, e.g. for lubricant oil circulation systems]
5/02  .  Centrifuges consisting of a plurality of separate bowls rotating round an axis situated between the bowls
5/04  .  Radial chamber apparatus for separating predominantly liquid mixtures, e.g. butyrometers
5/0407  .  .  (for liquids contained in receptacles)
5/0414  .  .  (comprising test tubes)
5/0421  .  .  .  (pivotably mounted)
5/0428  .  .  (with flexible receptacles)
2005/0435  .  .  (with adapters for centrifuge tubes or bags)
5/0442  .  .  (with means for adding or withdrawing liquid substances during the centrifugation, e.g. continuous centrifugation)
2005/045  .  .  (having annular separation channels)
2005/0457  .  .  (having three-dimensional spirally wound separation channels)
Elements: Accessories

7/00 Elements of centrifuges (drives B04B 9/00; feeding, charging, or discharging appurtenances or devices B04B 11/00)

2007/005 . . . (Retaining arms for gripping the stationary part of a centrifuge bowl or hold the bowl itself)

7/02 . Casings; Lids (shock absorbers, vibration dampers F16F)

2007/025 . . . (Lids for laboratory centrifuge rotors)

7/04 . . . Casings facilitating discharge

7/06 . . . Safety devices (Regulating)

2007/065 . . . (Devices and measures in the event of rotor fracturing, e.g. lines of weakness, stress regions)

7/08 . . . Rotary bowls (centrifugal casting machines B22D)

7/085 . . . (fibre- or metal-reinforced)

7/10 . . . Bowls for shaping solids

7/12 . . . Inserts, e.g. armouring plates

7/14 . . . for separating walls of conical shape

7/16 . . . Sieves or filters (filters in general B01D; sieves in general B07B)

7/18 . . . formed or coated with sieving or filtering elements (filters in general B01D; sieves in general B07B)

9/00 Drives specially designed for centrifuges; Arrangement or disposition of transmission gearing; Suspending or balancing rotary bowls

9/02 . Electric motor drives [(dynamo-electric machines associated with centrifuges H02K 7/16)]

9/04 . . . Direct drive

9/06 . . . Fluid drive

9/08 . . . Arrangement or disposition of transmission gearing [(for solid bowl screw centrifuges B04B 1/2016; Couplings; Brakes]

2009/085 . . . (Locking means between drive shaft and rotor)

9/10 . . . Control of the drive; Speed regulating [(for solid bowl screw centrifuges B04B 1/2016)]

9/12 . Suspending rotary bowls (Bearings; Packings for bearings)

11/00 Feeding, charging, or discharging bowls (B04B 1/00, B04B 3/00, B04B 7/04 take precedence)

11/02 . Continuous feeding or discharging; Control arrangements therefor

11/04 . Periodical feeding or discharging; Control arrangements therefor

11/043 . . . [Load indication with or without control arrangements]

2011/046 . . . [Loading, unloading, manipulating sample containers]

11/05 . . . Base discharge

11/06 . . . Arrangement of distributors or collectors in centrifuges

11/08 . . . Skimmers or scrapers for discharging (Regulating thereof)

11/082 . . . [Skimmers for discharging liquid]

2011/084 . . . [with cables for cake removal]

2011/086 . . . [with a plurality of scraper blades]

2011/088 . . . [with angularly and axially offset scrapers]

13/00 Control arrangements specially designed for centrifuges; Programme control of centrifuges (control arrangements for feed, charge, or discharge B04B 11/00)

13/003 . . . (Rotor identification systems)

2013/006 . . . (Interface detection or monitoring of separated components)

15/00 Other accessories for centrifuges

15/02 . . . for cooling, heating, or heat insulating

15/04 . . . for suppressing the formation of foam

15/06 . . . for cleaning bowls, filters, sieves, inserts, or the like

15/08 . . . for ventilating or producing a vacuum in the centrifuge

15/10 . . . for forming a filtering layer in the rotary bowl

15/12 . . . for drying or washing the separated solid particles