

ECLA**EUROPEAN CLASSIFICATION****B04C**

APPARATUS USING FREE VORTEX FLOW, e.g. CYCLONES ([N: centrifugal separation of water from steam [B01D45/12](#);] jet mills [B02C19/06](#); [N: wind sifters [B07B7/00](#);] cyclonic type combustion apparatus [F23](#); [N: vortex burners for cyclone-type combustion apparatus [F23D1/02](#); cyclonic type combustion apparatus for gas turbines [F23R3/00](#)]) [C9411]

Note

This subclass covers apparatus for separating, mixing or like treating in which centrifugal effects are generated by free vortex flow, otherwise than by rotary bowls, rotors or curved passages.

B04C1/00

Apparatus in which the main direction of flow follows a flat spiral; [N: so-called flat cyclones or vortex chambers]

B04C3/00

Apparatus in which the axial direction of the vortex [N: (flow following a screw-thread type line)] **remains unchanged** [N: Also devices in which one of the two discharge ducts returns centrally through the vortex chamber, a reverse-flow vortex being prevented by bulkheads in the central discharge duct (combined with other devices [B04C9/00](#))] [C9411]

B04C3/02

- . with heating or cooling, e.g. quenching, means

B04C3/04

- . Multiple arrangement thereof [N: (combined with types according to other groups, [B04C7/00](#))]

B04C3/06

- . Construction of inlets or outlets to the vortex chamber

B04C5/00

Apparatus in which the axial direction of the vortex is reversed [N: (combined with other devices [B04C9/00](#))]

B04C5/02

- . Construction of inlets by which the vortex flow is generated [N: e.g. tangential admission, the fluid flow being forced to follow a downward path by spirally wound bulkheads, or with slightly downwardly-directed tangential admission] (fluid dynamics in general [F15D](#)) [C9411]

B04C5/04

- . . Tangential inlets

B04C5/06

- . . Axial inlets

B04C5/08

- . Vortex chamber constructions

B04C5/081

- . . Shapes or dimensions

B04C5/085

- . . with wear-resisting arrangements

B04C5/087

- . . with flexible gas-tight walls

B04C5/10

- . . with perforated walls

B04C5/103

- . . Bodies or members, e.g. bulkheads, guides, in the vortex chamber (cores [B04C5/107](#))

B04C5/107

- . . Cores; Devices for inducing an air-core in hydrocyclones (forming part of the outlet pipe [B04C5/13](#))

B04C5/12

- . Construction of the overflow ducting, e.g. diffusing or spiral exits

- B04C5/13
 - . . . formed as a vortex finder and extending into the vortex chamber [N: (exits with bulkheads preventing reverse flow vortex [B04C3/00](#))]; Discharge from vortex finder otherwise than at the top of the cyclone; Devices for controlling the overflow
- B04C5/14
 - . Construction of the underflow ducting; Apex constructions; Discharge arrangements; [N: discharge through sidewall provided with a few slits or perforations (provided with a great number of slits or perforations [B04C5/10](#))]
- B04C5/15
 - . . . with swinging flaps or revolving sluices; Sluices; Check-valves
- B04C5/16
 - . . . with variable-size outlets from the underflow ducting
- B04C5/18
 - . . . with auxiliary fluid assisting discharge
- B04C5/181
 - . . . Bulkheads or central bodies in the discharge opening
- B04C5/185
 - . . . Dust collectors
- B04C5/187
 - forming an integral part of the vortex chamber
- B04C5/20
 - . with heating or cooling, e.g. quenching, means
- B04C5/22
 - . with cleaning means
- B04C5/23
 - . . . using liquids
- B04C5/24
 - . Multiple arrangement thereof [N: (combination types according to other /00 groups, [B04C7/00](#))]
- B04C5/26
 - . . . for series flow
- B04C5/28
 - . . . for parallel flow
- B04C5/30
 - . . . Recirculation constructions in or with cyclones which accomplish a partial recirculation of the medium, e.g. by means of conduits
- B04C7/00**

Apparatus not provided for in group [B04C1/00](#), [B04C3/00](#), or [B04C5/00](#); Multiple arrangements not provided for in one of the groups [B04C1/00](#), [B04C3/00](#), or [B04C5/00](#); Combinations of apparatus covered by two or more of the groups [B04C1/00](#), [B04C3/00](#), or [B04C5/00](#) [C9411]
- B04C9/00**

Combinations with other devices, e.g. fans, [N: expansion chambers, diffusors, water locks] (with filters [B01D50/00](#)) [C9411]
- B04C11/00**

Accessories, e.g. safety or control devices, not otherwise provided for [N: e.g. regulators, valves in inlet or overflow ducting] (with electrostatic precipitating arrangements [B03C3/14](#)) [C9411]