

ECLA**EUROPEAN CLASSIFICATION****B02C**

CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN ([N: clod-crushers for soil-working machines [A01B17/00C](#); household tools and machines for pulverising foodstuffs, e.g. coffee and spice mills [A47J42/00](#); pharmaceutical mortars [A61J3/02](#); mechanical processing of refuse and garbage [B03B9/06](#); dressing mould materials by grinding [B22C5/04](#)]; obtaining metallic powder by crushing, grinding or milling [B22F9/04](#); [N: recovery of plastics by desintegration [B29B17/00](#); crushing raw materials in starch making [C08B30/02](#); shredding devices for sugar beet and sugar cane [C13C1/00](#); beaters for papermaking [D21D1/02](#); crushing devices specially for transport in mines [E21F13/00B](#); slag crushing devices [F23J1/00](#); fuel milling devices in combustion apparatus [F23K1/00](#); household devices for crushing coal [F24B15/02](#); ice desintegrating devices [F25C5/02](#)])
[C2011.10]

B02C1/00

Crushing or disintegrating by reciprocating members

B02C1/00B

- . [N: hydraulically or pneumatically operated]

B02C1/02

- . Jaw crushers or pulverisers

B02C1/02C

- . . [N: Jaw clearance or overload control]

B02C1/04

- . . with single-acting jaws

B02C1/04B

- . . . [N: with cooperating single acting jaws]

B02C1/04D

- . . . [N: of the plural stage type]

B02C1/06

- . . with double-acting jaws

B02C1/08

- . . with jaws coacting with rotating roller

B02C1/10

- . . Shape or construction of jaws

B02C1/12

- . Mills with non-rotating spiked members

B02C1/14

- . Stamping mills

B02C2/00

Crushing or disintegrating by gyratory or cone crushers [N: (with non-coaxial discs with intersecting axes [B02C7/00B](#))]

B02C2/00B

- . [N: Lining]

B02C2/00F

- . [N: Feeding devices]

B02C2/02

- . eccentrically moved

B02C2/04

- . . with vertical axis

B02C2/04B

- . . . [N: Moved by an eccentric weight]

B02C2/04D

- . . . [N: and with bowl adjusting or controlling mechanisms ([B02C2/04B](#), [B02C2/06](#) take precedence)]

B02C2/04F

- . . . [N: and with head adjusting or controlling mechanisms ([B02C2/04B](#), [B02C2/06](#) take precedence)]

- B02C2/06 . . . and with top bearing [N: ([B02C2/04B](#) takes precedence)]
- B02C2/08 . . with horizontal axis
- B02C2/10 . concentrically moved; Bell crushers

B02C4/00 **Crushing or disintegrating by roller mills** (with milling members in the form of rollers or balls co-operating with rings or discs [B02C15/00](#); roller mills or roll refiners exclusively for chocolate [A23G1/10](#), [A23G1/12](#))

- B02C4/02 . with two or more rollers
- B02C4/04 . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
- B02C4/06 . . specially adapted for milling grain
- B02C4/08 . . with co-operating corrugated or toothed crushing-rollers
- B02C4/10 . with a roller co-operating with a stationary member
- B02C4/12 . . in the form of a plate
- B02C4/14 . . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
- B02C4/16 . . . specially adapted for milling grain
- B02C4/18 . . in the form of a bar
- B02C4/20 . . . wherein the roller is corrugated or toothed
- B02C4/22 . . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
- B02C4/24 . . . specially adapted for milling grain
- B02C4/26 . . in the form of a grid or grating
- B02C4/28 . Details
- B02C4/28B . . [N: Lateral sealing shields]
- B02C4/28F . . [N: Feeding devices]
- B02C4/30 . . Shape or construction of rollers
- B02C4/30B . . . [N: Wear resistant rollers] [N9601]
- B02C4/32 . . Adjusting, applying pressure to, or controlling the distance between, milling members
- B02C4/34 . . . in mills wherein a roller co-operates with a stationary member
- B02C4/36 . . . in mills specially adapted for paste-like materials
- B02C4/38 . . . in grain mills
- B02C4/40 . . Detachers, e.g. scrapers
- B02C4/42 . . Driving mechanisms; Roller speed control
- B02C4/42B . . . [N: with vibrating or oscillating mechanisms] [N9602]
- B02C4/42D . . . [N: Torque counterbalancing mechanisms] [N9703]
- B02C4/44 . . Cooling or heating rollers or bars

B02C7/00 **Crushing or disintegrating by disc mills** (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively [A23G1/04](#)) [C9602]

- B02C7/00B . [N: Crushers with non-coaxial toothed discs with intersecting axes]
- B02C7/02 . with coaxial discs

- B02C7/04 . . with concentric circles of intermeshing teeth
- B02C7/06 . . with horizontal axis ([B02C7/04](#) takes precedence)
- B02C7/08 . . with vertical axis ([B02C7/04](#) takes precedence)
- B02C7/10 . with eccentric discs
- B02C7/11 . Details
- B02C7/12 . . Shape or construction of discs
- B02C7/13 . . . for grain mills
- B02C7/14 . . Adjusting, applying pressure to, or controlling distance between, discs
- B02C7/16 . . Driving mechanisms
- B02C7/17 . . Cooling or heating of discs
- B02C7/175 . Disc mills specially adapted for paste-like material, e.g. paint, chocolate, colloids
- B02C7/18 . Disc mills specially adapted for grain
- B02C7/18B . . [N: with horizontal axis]
- B02C7/18C . . [N: with vertical axis]
- B02C7/18D . . [N: Adjusting, applying pressure to, or controlling distance between, discs]
- B02C7/18F . . [N: Driving mechanisms]
- B02C9/00 Other milling methods or mills specially adapted for grain**
- B02C9/02 . Cutting or splitting grain
- B02C9/04 . Systems or sequences of operations; Plant
- B02C11/00 Other auxiliary devices or accessories specially adapted for grain mills**
- B02C11/02 . Breaking up amassed particles, e.g. flakes
- B02C11/04 . Feeding devices
- B02C11/06 . Arrangements for preventing fire or explosion ([methods for preventing or extinguishing fires, devices therefor A62C](#))
- B02C11/08 . Cooling, heating, ventilating, conditioning with respect to temperature or water content ([conditioning grain before milling B02B1/08](#); [air-conditioning or ventilating in general F24F](#))
- B02C13/00 Disintegrating by mills having rotary beater elements; [N: Hammer mills]**
- B02C13/02 . with horizontal rotor shaft ([with axial flow B02C13/10](#))
- B02C13/04 . . with beaters hinged to the rotor; Hammer mills
- B02C13/06 . . with beaters rigidly connected to the rotor
- B02C13/08 . . . and acting as a fan

- B02C13/09 . . . and throwing the material against an anvil or impact plate [N: (with vertical axis [B02C13/18B](#))]
- B02C13/09B [N: with an adjustable anvil or impact plate]
- B02C13/10 . with horizontal rotor shaft and axial flow
- B02C13/12 . . with vortex chamber
- B02C13/13 . with horizontal rotor shaft and combined with sifting devices, e.g. for making powdered fuel
- B02C13/14 . with vertical rotor shaft, e.g. combined with sifting devices
- B02C13/16 . . with beaters hinged to the rotor
- B02C13/18 . . with beaters rigidly connected to the rotor
- B02C13/18B . . . [N: the material to be crushed being thrown against an anvil or impact plate (with horizontal axis [B02C13/09](#); centrifugal acceleration of material through radially extending channels [B02C19/00F2C](#); centrifugal acceleration of material by means of an open top rotor [B02C19/00F2F](#))] [C9903]
- B02C13/18B2 [N: by means of beater or impeller elements fixed on top of a disc type rotor] [N9903]
- B02C13/18B2B [N: the beater or impeller elements being rotatably fixed around their own axis] [N9903]
- B02C13/18B2D [N: with dead bed protected beater or impeller elements] [N9903]
- B02C13/18B4 [N: by means of beater or impeller elements fixed in between an upper and lower rotor disc] [N9903]
- B02C13/18B4D [N: with dead bed protected beater or impeller elements] [N9903]
- B02C13/18B10 [N: Construction or shape of anvil or impact plate] [N9903]
- B02C13/20 . with two or more co-operating rotors
- B02C13/20C . . [N: arranged concentrically] [N9611]
- B02C13/22 . with intermeshing pins; [N: Pin Disk Mills]
- B02C13/24 . . arranged around a vertical axis
- B02C13/26 . Details
- B02C13/28 . . Shape or construction of beater elements
- B02C13/28B . . . [N: the beater elements being rigidly connected to the rotor]
- B02C13/282 . . Shape or inner surface of mill-housings
- B02C13/284 . . . Built-in screens
- B02C13/286 . . Feeding or discharge
- B02C13/288 . . Ventilating, or influencing air circulation
- B02C13/30 . . Driving mechanisms
- B02C13/31 . . Safety devices or measures
- B02C15/00 Disintegrating by milling members in the form of rollers or balls co-operating with rings or discs [N: (high-speed drum mills [B02C19/11](#))]**
- B02C15/00B . [N: Air flow directing means positioned on the periphery of the horizontally rotating milling surface]

- B02C15/00D . [N: Shape or construction of discs or rings] [N9707]
- B02C15/00F . [N: Shape or construction of rollers or balls] [N0103]
- B02C15/00F2 . . [N: Rollers or balls of composite construction] [N0103]
- B02C15/00G . [N: Ring or disc drive gear arrangement] [N0103]
- B02C15/00H . [N: Mills with rollers pressed against a rotary horizontal disc (with pendularly mounted rollers [B02C15/04](#))] [N0103]
- B02C15/02 . Centrifugal pendulum-type mills
- B02C15/04 . Mills with pressed pendularly-mounted rollers, e.g. spring pressed
- B02C15/04B . . [N: pressed against the interior of a ring rotating in a vertical plane] [N0103]
- B02C15/06 . Mills with rollers forced against the interior of a rotary ring, e.g. under spring action ([B02C15/04](#) takes precedence)
- B02C15/08 . Mills with balls or rollers centrifugally forced against the inner surface of a ring, the balls or rollers of which are driven by a centrally arranged member ([B02C15/02](#) takes precedence)
- B02C15/10 . Mills with balls or rollers centrifugally forced against the inner surface of a ring, the balls or rollers of which are driven by other means than a centrally-arranged member
- B02C15/12 . Mills with at least two discs [N: or rings] and interposed balls or rollers mounted like ball or roller bearings
- B02C15/12B . . [N: with rings and interposed rollers] [N0103]
- B02C15/14 . Edge runners, e.g. Chile mills
- B02C15/16 . with milling members essentially having different peripheral speeds and in the form of a hollow cylinder or cone and an internal roller or cone
- B02C17/00** **Disintegrating by tumbling mills, i.e. mills having a container charged with the material to be disintegrated with or without special disintegrating members such as pebbles or balls (high-speed drum mills [B02C19/11](#); [N: drums for polishing or grinding [B24B](#)])**
- B02C17/00B . [N: with rotary cutting or beating elements]
- B02C17/00M . [N: the charge being turned over by magnetic forces]
- B02C17/00R . [N: specially adapted for disintegrating refuse]
- B02C17/02 . with perforated container
- B02C17/04 . with unperforated container
- B02C17/06 . . with several compartments
- B02C17/07 . . . in radial arrangement

- B02C17/08 . . with containers performing a planetary movement
- B02C17/10 . with one or a few disintegrating members arranged in the container
- B02C17/14 . Mills in which the charge to be ground is turned over by movements of the container other than by rotating, e.g. by swinging, vibrating, tilting [N: (mills provided with vibrators in general [B02C19/16](#))]
- B02C17/16 . Mills in which a fixed container houses stirring means tumbling the charge
- B02C17/16B . . [N: Arrangements for separating milling media and ground material]
- B02C17/16C . . [N: Stirring means]
- B02C17/16G . . [N: of the annular gap type]
- B02C17/16K . . [N: with a basket media milling device arranged in or on the container, involving therein a circulatory flow of the material to be milled] [N9708]
- B02C17/18 . Details
- B02C17/18A . . [N: Monitoring devices for tumbling mills] [N9603]
- B02C17/18B . . [N: Bearings specially adapted for tumbling mills]
- B02C17/18C . . [N: Cooling or heating devices]
- B02C17/18D . . [N: Lids]
- B02C17/18F . . [N: Lifting devices (lifting devices associated with the lining for containers [B02C17/22](#))]
- B02C17/18G . . [N: Feeding or discharging devices]
- B02C17/18G2 . . . [N: Discharging devices combined with sorting or separating of material ([B02C17/18G4](#) takes precedence)]
- B02C17/18G2B [N: with separator arranged in discharge path of crushing zone]
- B02C17/18G2B2 [N: with return of oversize material to crushing zone]
- B02C17/18G2C [N: with more than one separator]
- B02C17/18G2D [N: with separator defining termination of crushing zone, e.g. screen denying egress of oversize material]
- B02C17/18G4 . . . [N: Adding fluid, other than for crushing by fluid energy]
- B02C17/18G4B [N: after crushing]
- B02C17/18G4B2 [N: with recirculation of material to crushing zone]
- B02C17/18G4C [N: passing gas through crushing zone]
- B02C17/18G4C2 [N: characterised by point of gas entry or exit or by gas flow path]
- B02C17/18G4C4 [N: the applied gas acting to effect material separation ([B02C17/18G4C8](#) takes precedence)]
- B02C17/18G4C6 [N: with return of oversize material to crushing zone ([B02C17/18G4C8](#) takes precedence)]
- B02C17/18G4C8 [N: gas being recirculated to crushing zone]
- B02C17/20 . . Disintegrating members
- B02C17/20B . . . [N: Adding disintegrating members to the tumbling mill]
- B02C17/22 . . Lining for containers
- B02C17/22R . . . [N: using rubber or elastomeric material] [N0011]
- B02C17/24 . . Driving mechanisms
- B02C18/00** **Disintegrating by knives or other cutting or tearing members which chop material**

into fragments [N: (tree stump comminutors [A01G23/06C](#))] [C0302]

- B02C18/00B . [N: specially adapted for disintegrating documents]
- B02C18/00D . [N: with cutting or tearing members fixed on endless flexible members (without cutting or tearing members [B02C19/00D](#))]
- B02C18/00W . [N: specially adapted for disintegrating garbage, waste or sewage] [N0509]
- B02C18/00W2 . . [N: for waste water or for garbage] [N0509]
- B02C18/02 . with reciprocating knives
- B02C18/04 . . Details
- B02C18/06 . with rotating knives
- B02C18/06B . . [N: with rotor elements extending axially in close radial proximity of a concentrically arranged slotted or perforated ring]
- B02C18/06D . . [N: within rotatable bowls, e.g. meat cutters]
- B02C18/06G . . [N: Tub-grinders]
- B02C18/08 . . within vertical containers [N: ([B02C18/06B](#), [B02C18/06D](#) take precedence)]
- B02C18/08D . . . [N: with a disc rotor having generally radially extending slots or openings bordered with cutting knives] [N9804]
- B02C18/08P . . . [N: specially adapted for disintegrating plastics, e.g. cinematographic films (for plastic bottles [B02C19/00W8P](#), disintegrating plastics [B29B17/00](#))] [N0509]
- B02C18/10 . . . with drive arranged above container [N: ([B02C18/08D](#) takes precedence)] [C9804]
- B02C18/12 . . . with drive arranged below container [N: ([B02C18/08D](#) takes precedence)] [C9804]
- B02C18/14 . . within horizontal containers [N: ([B02C18/06B](#), [B02C18/06D](#) take precedence)]
- B02C18/14A . . . [N: with axial flow] [N9510]
- B02C18/14B . . . [N: with two or more inter-engaging rotatable cutter assemblies]
- B02C18/14D . . . [N: with a disc rotor having generally radially extending slots or openings bordered with cutting knives] [N9702]
- B02C18/14E . . . [N: with axially elongated knives] [N9804]
- B02C18/14F . . . [N: with knives spaced axially and circumferentially on the periphery of a cylindrical rotor unit] [N9804]
- B02C18/14H . . . [N: with a rotor comprising a plurality of axially contiguous disc-like segments each having at least one radially extending cutting element] [N9804]
- B02C18/14P . . . [N: specially adapted for disintegrating plastics, e.g. cinematographic films (for plastic bottles [B02C19/00W8P](#), disintegrating plastics [B29B17/00](#))] [N0509]
- B02C18/16 . . Details
- B02C18/18 . . . Knives; Mountings thereof
- B02C18/18D [N: Disc-shaped knives]
- B02C18/18D2 [N: with peripherally arranged demountable cutting tips or elements]
- B02C18/18E [N: Axially elongated knives]
- B02C18/20 Sickle-shaped knives
- B02C18/22 Feed or discharge means

- B02C18/22D [N: Discharge means] [N9906]
- B02C18/22F [N: Feed means] [N9906]
- B02C18/22F2 [N: of ram or pusher type] [N9906]
- B02C18/22F4 [N: of conveyor belt type ([B02C18/22F6](#) takes precedence)] [N9906]
- B02C18/22F6 [N: of conveyor belt and cooperating roller type][N9906]
- B02C18/22F8 [N: of screw type] [N9906]
- B02C18/22F10 [N: of revolving drum type] [N9906]
- B02C18/22F12 [N: using a rotating arm] [N9906]
- B02C18/22F14 [N: using rollers ([B02C18/22F6](#) takes precedence)] [N9906]
- B02C18/22F16 [N: Feed chute arrangements] [N9906]
- B02C18/24 . . . Drives

- B02C18/26 . with knives which both reciprocate and rotate

- B02C18/28 . with spiked cylinders

- B02C18/30 . Mincing machines with perforated discs and feeding worms
- B02C18/30B . . [N: with horizontal axis] [N9702]
- B02C18/30B2 . . . [N: with a knife-perforated disc unit] [N9702]
- B02C18/30B4 . . . [N: with several axially aligned knife-perforated disc units] [N9702]
- B02C18/30D . . [N: Details] [N9702]
- B02C18/32 . . with sharpening devices
- B02C18/34 . . with means for cleaning the perforated discs
- B02C18/36 . . Knives or perforated discs
- B02C18/36C . . . [N: Knives] [N9702]
- B02C18/36D . . . [N: Perforated discs] [N9702]
- B02C18/38 . . Drives

- B02C19/00 Other disintegrating devices or methods (for grain [B02C9/00](#))**

- B02C19/00D . [N: Crushing by endless flexible members (with cutting or tearing members [B02C18/00D](#))]

- B02C19/00F . [N: Devices for disintegrating materials by collision of these materials against a breaking surface or breaking body and/or by friction between the material particles (also for grain)]
- B02C19/00F2 . . [N: using a rotor accelerating the materials centrifugally against a circumferential breaking surface (rotors with beater elements [B02C13/09](#), [B02C13/18B](#))] [N9903]
- B02C19/00F2C . . . [N: by means of a rotor with radially extending channels] [N9903]
- B02C19/00F2F . . . [N: by means of an open top rotor] [N9903]
- B02C19/00F2F2 [N: with concentrically arranged open top rotors] [N9903]
- B02C19/00F3 . . [N: the materials to be pulverised being projected against a breaking surface or breaking body by a pressurised fluid (jet mills [B02C19/06](#))]
- B02C19/00F4 . . [N: the materials to be pulverised being disintegrated by collision of, or friction between, the material particles (jet mills [B02C19/06](#))]

- B02C19/00W . [N: specially adapted for specific materials not otherwise provided for] [N0509]

- B02C19/00W2 . . [N: specially adapted for shredding scrap metal, e.g. automobile bodies] [N0509]
- B02C19/00W4 . . [N: specially adapted for breaking-up fluorescent tubes] [N0509]
- B02C19/00W6 . . [N: specially adapted for disintegrating medical waste (**disposal of medical waste** [B09B3/00M](#), **sterilisation of refuse** [A61L11/00](#))] [N0509]
- B02C19/00W8 . . [N: specially adapted for breaking-up bottles] [N0509]
- B02C19/00W8G . . . [N: for glass bottles] [N0509]
- B02C19/00W8P . . . [N: for plastic bottles] [N0509]

- B02C19/06 . Jet mills
- B02C19/06B . . [N: of the cylindrical type ([B02C19/06K](#) takes precedence)]
- B02C19/06D . . [N: of the toroidal type ([B02C19/06K](#) takes precedence)]
- B02C19/06F . . [N: of the opposed-jet type ([B02C19/06K](#) takes precedence)]
- B02C19/06H . . [N: of the jet-anvil type ([B02C19/06K](#) takes precedence)]
- B02C19/06K . . [N: of the fluidised-bed type]

- B02C19/08 . Pestle and mortar

- B02C19/10 . Mills in which a friction block is towed along the surface of a cylindrical or annular member

- B02C19/11 . High-speed drum mills ([for separating B04B](#))

- B02C19/16 . Mills provided with vibrators ([N: roller mills [B02C4/42B](#)]; tumbling mills [B02C17/14](#)) [[C9602](#)]

- B02C19/18 . Use of auxiliary physical effects, e.g. ultrasonics, irradiation, for disintegrating
- B02C19/18C . . [N: Use of cold or heat for disintegrating ([B02C4/44](#), [B02C7/17](#), [B02C11/08](#) take precedence)]

- B02C19/20 . Disintegrating by grating [N: (**domestic food grating devices** [A47J43/25](#))] [[C0908](#)]

- B02C19/22 . Crushing mills with screw-shaped crushing means

- B02C21/00** **Disintegrating plant with or without drying of the material** ([for grain B02C9/04](#); [N: combined with devices for sorting the material, provisionally [B02C23/00B](#)])

- B02C21/00B . [N: using a combination of a roller mill and a drum mill] [N9605]
- B02C21/00B2 . . [N: the roller mill having cooperating rollers] [N9605]

- B02C21/00C . [N: using a combination of two or more drum or tube mills] [N9905]

- B02C21/02 . Transportable disintegrating plant
- B02C21/02S . . [N: self-propelled] [N0110]

- B02C23/00** **Auxiliary methods or auxiliary devices or accessories specially adapted for crushing or disintegrating not provided for in preceding groups or not specially adapted to apparatus covered by a single preceding group** ([N: specially adapted for grain mills [B02C11/00](#);] separating or sorting in general [B03](#), [B04](#), [B07](#))

- B02C23/02 . Feeding devices ([N: for grain mills 11/04; for roller mills [B02C4/28F](#)]; transport devices in general [B65G](#))
- B02C23/04 . Safety devices (in general [F16P](#); [N: for rotary mills [B02C13/31](#)])
- B02C23/06 . Selection or use of additives to aid disintegrating
- B02C23/08 . Separating or sorting of material, associated with crushing or disintegrating ([B02C23/18](#) takes precedence; [N: beater mills combined with sifting devices [B02C13/13](#), [B02C13/14](#); for tumbling mills [B02C17/18G2](#)] [[C0111](#)])
- B02C23/10 . . with separator arranged in discharge path of crushing or disintegrating zone
- B02C23/12 . . . with return of oversize material to crushing or disintegrating zone
- B02C23/14 . . with more than one separator
- B02C23/16 . . with separator defining termination of crushing or disintegrating zone, e.g. screen denying egress of oversize material
- B02C23/18 . Adding fluid, other than for crushing or disintegrating by fluid energy ([N: for tumbling mills [B02C17/18G4](#);] feeding devices [B02C23/02](#))
- B02C23/20 . . after crushing or disintegrating
- B02C23/22 . . . with recirculation of material to crushing or disintegrating zone
- B02C23/24 . . Passing gas through crushing or disintegrating zone ([N: [B02C15/00B](#)], [B02C23/38](#), [B02C23/40](#) take precedence)
- B02C23/26 . . . characterised by point of gas entry or exit or by gas flow path
- B02C23/28 . . . gas moving means being integral with, or attached to, crushing or disintegrating element
- B02C23/30 . . . the applied gas acting to effect material separation ([B02C23/34](#) takes precedence)
- B02C23/32 . . . with return of oversize material to crushing or disintegrating zone ([B02C23/34](#) takes precedence)
- B02C23/34 . . . gas being recirculated to crushing or disintegrating zone
- B02C23/36 . . the crushing or disintegrating zone being submerged in liquid
- B02C23/38 . . in apparatus having multiple crushing or disintegrating zones
- B02C23/40 . . with more than one means for adding fluid to the material being crushed or disintegrated
- B02C25/00 Control arrangements specially adapted for crushing or disintegrating**