

SECTION B — PERFORMING OPERATIONS; TRANSPORTING

B02 CRUSHING, PULVERISING, OR DISINTEGRATING; PREPARATORY TREATMENT OF GRAIN FOR MILLING

B02C CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN (obtaining metallic powder by crushing, grinding or milling B22F 9/04)

Subclass index

DISINTEGRATING IN GENERAL

Using reciprocating or rotary crushers.....	1/00, 2/00
Using rollers.....	4/00
Using discs.....	7/00
Using rotary beaters.....	13/00
By tumbling.....	17/00
Otherwise.....	15/00, 18/00, 19/00
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DISINTEGRATING PLANT; CONTROL ARRANGEMENTS.....21/00, 25/00

MILLING METHODS OR MILLS SPECIALLY ADAPTED FOR GRAIN; ACCESSORIES THEREFOR..4/06, 4/16, 4/24, 4/38, 7/13, 7/18, 9/00, 11/00

1/00	Crushing or disintegrating by reciprocating members	4/20	• • • wherein the roller is corrugated or toothed
1/02	• Jaw crushers or pulverisers	4/22	• • • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
1/04	• • with single-acting jaws	4/24	• • • specially adapted for milling grain
1/06	• • with double-acting jaws	4/26	• • in the form of a grid or grating
1/08	• • with jaws coacting with a rotating roller	4/28	• Details
1/10	• • Shape or construction of jaws	4/30	• • Shape or construction of rollers
1/12	• Mills with non-rotating spiked members	4/32	• • Adjusting, applying pressure to, or controlling the distance between, milling members
1/14	• Stamping mills	4/34	• • • in mills wherein a roller co-operates with a stationary member
2/00	Crushing or disintegrating by gyratory or cone crushers	4/36	• • • in mills specially adapted for paste-like materials
2/02	• eccentrically moved	4/38	• • • in grain mills
2/04	• • with vertical axis	4/40	• • Detachers, e.g. scrapers
2/06	• • • and with top bearing	4/42	• • Driving mechanisms; Roller speed control
2/08	• • with horizontal axis	4/44	• • Cooling or heating rollers or bars
2/10	• concentrically moved; Bell crushers		
4/00	Crushing or disintegrating by roller mills (with milling members in the form of rollers or balls co-operating with rings or discs B02C 15/00; roller mills or roll refiners exclusively for chocolate A23G 1/10, A23G 1/12)	7/00	Crushing or disintegrating by disc mills (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively A23G 1/04)
4/02	• with two or more rollers	7/02	• with coaxial discs
4/04	• • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	7/04	• • with concentric circles of intermeshing teeth
4/06	• • specially adapted for milling grain	7/06	• • with horizontal axis (B02C 7/04 takes precedence)
4/08	• • with co-operating corrugated or toothed crushing-rollers	7/08	• • with vertical axis (B02C 7/04 takes precedence)
4/10	• with a roller co-operating with a stationary member	7/10	• with eccentric discs
4/12	• • in the form of a plate	7/11	• Details
4/14	• • • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	7/12	• • Shape or construction of discs
4/16	• • • specially adapted for milling grain	7/13	• • • for grain mills
4/18	• • in the form of a bar	7/14	• • Adjusting, applying pressure to, or controlling distance between, discs
		7/16	• • Driving mechanisms
		7/17	• • Cooling or heating of discs
		7/175	• Disc mills specially adapted for paste-like material, e.g. paint, chocolate, colloids

B02C

- 7/18 • Disc mills specially adapted for grain
- 9/00 Other milling methods or mills specially adapted for grain**
- 9/02 • Cutting or splitting grain
- 9/04 • Systems or sequences of operations; Plant
- 11/00 Other auxiliary devices or accessories specially adapted for grain mills**
- 11/02 • Breaking up amassed particles, e.g. flakes
- 11/04 • Feeding devices
- 11/06 • Arrangements for preventing fire or explosion (methods for preventing or extinguishing fires, devices therefor A62C)
- 11/08 • Cooling, heating, ventilating, conditioning with respect to temperature or water content (conditioning grain before milling B02B 1/08; air-conditioning or ventilating in general F24F)
- 13/00 Disintegrating by mills having rotary beater elements**
- 13/02 • with horizontal rotor shaft (with axial flow B02C 13/10)
- 13/04 • • with beaters hinged to the rotor; Hammer mills
- 13/06 • • with beaters rigidly connected to the rotor
- 13/08 • • • and acting as a fan
- 13/09 • • • and throwing the material against an anvil or impact plate
- 13/10 • with horizontal rotor shaft and axial flow
- 13/12 • • with vortex chamber
- 13/13 • with horizontal rotor shaft and combined with sifting devices, e.g. for making powdered fuel
- 13/14 • with vertical rotor shaft, e.g. combined with sifting devices
- 13/16 • • with beaters hinged to the rotor
- 13/18 • • with beaters rigidly connected to the rotor
- 13/20 • with two or more co-operating rotors
- 13/22 • with intermeshing pins
- 13/24 • • arranged around a vertical axis
- 13/26 • Details
- 13/28 • • Shape or construction of beater elements
- 13/282 • • Shape or inner surface of mill-housings
- 13/284 • • • Built-in screens
- 13/286 • • Feeding or discharge
- 13/288 • • Ventilating, or influencing air circulation
- 13/30 • • Driving mechanisms
- 13/31 • • Safety devices or measures
- 15/00 Disintegrating by milling members in the form of rollers or balls co-operating with rings or discs**
- 15/02 • Centrifugal pendulum-type mills
- 15/04 • Mills with pressed pendularly-mounted rollers, e.g. spring pressed [4]
- 15/06 • Mills with rollers forced against the interior of a rotary ring, e.g. under spring action (B02C 15/04 takes precedence) [4]
- 15/08 • 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 (B02C 15/02 takes precedence)
- 15/10 • 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
- 15/12 • Mills with at least two discs and interposed balls or rollers mounted like ball or roller bearings [4]
- 15/14 • Edge runners, e.g. Chile mills
- 15/16 • with milling members essentially having different peripheral speeds and in the form of a hollow cylinder or cone and an internal roller or cone
- 17/00 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 B02C 19/11)
- 17/02 • with perforated container
- 17/04 • with unperforated container
- 17/06 • • with several compartments
- 17/07 • • • in radial arrangement
- 17/08 • • with containers performing a planetary movement
- 17/10 • with one or a few disintegrating members arranged in the container
- 17/14 • 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
- 17/16 • Mills in which a fixed container houses stirring means tumbling the charge
- 17/18 • Details
- 17/20 • • Disintegrating members
- 17/22 • • Lining for containers
- 17/24 • • Driving mechanisms
- 18/00 Disintegrating by knives or other cutting or tearing members which chop material into fragments** (slicing B26D); **Mincing machines or similar apparatus using worms or the like** (machines for domestic use not covered otherwise A47J 43/04; multi-purpose machines for preparing food A47J 44/00)
- 18/02 • with reciprocating knives
- 18/04 • • Details
- 18/06 • with rotating knives
- 18/08 • • within vertical containers
- 18/10 • • • with drive arranged above container
- 18/12 • • • with drive arranged below container
- 18/14 • • within horizontal containers
- 18/16 • • Details
- 18/18 • • • Knives; Mountings thereof
- 18/20 • • • • Sickle-shaped knives
- 18/22 • • • Feed or discharge means
- 18/24 • • • Drives
- 18/26 • with knives which both reciprocate and rotate
- 18/28 • with spiked cylinders
- 18/30 • Mincing machines with perforated discs and feeding worms
- 18/32 • • with sharpening devices
- 18/34 • • with means for cleaning the perforated discs
- 18/36 • • Knives or perforated discs
- 18/38 • • Drives
- 19/00 Other disintegrating devices or methods** (for grain B02C 9/00)
- 19/06 • Jet mills
- 19/08 • Pestle and mortar
- 19/10 • Mills in which a friction block is towed along the surface of a cylindrical or annular member
- 19/11 • High-speed drum mills (for separating B04B)
- 19/16 • Mills provided with vibrators (tumbling mills B02C 17/14)
- 19/18 • Use of auxiliary physical effects, e.g. ultrasonics, irradiation, for disintegrating
- 19/20 • Disintegrating by grating
- 19/22 • Crushing mills with screw-shaped crushing means

- 21/00 Disintegrating plant with or without drying of the material** (for grain B02C 9/04)
- 21/02 • Transportable disintegrating plant
- 23/00 Auxiliary methods or auxiliary devices or accessories specially adapted for crushing or disintegrating not provided for in groups B02C 1/00-B02C 21/00 or not specially adapted to apparatus covered by one only of groups B02C 1/00-B02C 21/00** (separating or sorting in general B03, B04, B07)
- 23/02 • Feeding devices (transport devices in general B65G)
- 23/04 • Safety devices (in general F16P)
- 23/06 • Selection or use of additives to aid disintegrating
- 23/08 • Separating or sorting of material, associated with crushing or disintegrating (B02C 23/18 takes precedence) [2]
- 23/10 • • with separator arranged in discharge path of crushing or disintegrating zone [2]
- 23/12 • • • with return of oversize material to crushing or disintegrating zone [2]
- 23/14 • • with more than one separator [2]
- 23/16 • • with separator defining termination of crushing or disintegrating zone, e.g. screen denying egress of oversize material [2]
- 23/18 • Adding fluid, other than for crushing or disintegrating by fluid energy (feeding devices B02C 23/02) [2]
- 23/20 • • after crushing or disintegrating [2]
- 23/22 • • • with recirculation of material to crushing or disintegrating zone [2]
- 23/24 • • Passing gas through crushing or disintegrating zone (B02C 23/38, B02C 23/40 take precedence) [2]
- 23/26 • • • characterised by point of gas entry or exit or by gas flow path [2]
- 23/28 • • • gas moving means being integral with, or attached to, crushing or disintegrating element [2]
- 23/30 • • • the applied gas acting to effect material separation (B02C 23/34 takes precedence) [2]
- 23/32 • • • with return of oversize material to crushing or disintegrating zone (B02C 23/34 takes precedence) [2]
- 23/34 • • • gas being recirculated to crushing or disintegrating zone [2]
- 23/36 • • the crushing or disintegrating zone being submerged in liquid [2]
- 23/38 • • in apparatus having multiple crushing or disintegrating zones [2]
- 23/40 • • with more than one means for adding fluid to the material being crushed or disintegrated [2]
- 25/00 Control arrangements specially adapted for crushing or disintegrating**