

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)

DISINTEGRATING IN GENERAL		Otherwise	15/00, 18/00, 19/00
Using reciprocating or rotary crushers	1/00, 2/00	Auxiliary methods, accessories.....	23/00
Using rollers.....	4/00	DISINTEGRATING PLANT; CONTROL ARRANGEMENTS	
Using discs.....	7/00	21/00; 25/00	
Using rotary beaters.....	13/00	MILLING METHODS OR MILLS SPECIALLY ADAPTED FOR GRAIN; ACCESSORIES THEREFOR.....	
By tumbling	17/00	4/06, 4/16, 4/24, 4/38, 7/13, 7/18, 9/00; 11/00	

1/00	Crushing or disintegrating by reciprocating members	4/34	. . . in mills wherein a roller co-operates with a stationary member
1/02	. Jaw crushers or pulverisers	4/36	. . . in mills specially adapted for paste-like materials
1/04	. . with single-acting jaws	4/38	. . . in grain mills
1/06	. . with double-acting jaws	4/40	. . Detachers, e.g. scrapers
1/08	. . with jaws coacting with a rotating roller	4/42	. . Driving mechanisms; Roller speed control
1/10	. . Shape or construction of jaws	4/44	. . Cooling or heating rollers or bars
1/12	. Mills with non-rotating spiked members	7/00	Crushing or disintegrating by disc mills (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively A23G 1/04)
1/14	. Stamping mills	7/02	. with coaxial discs
2/00	Crushing or disintegrating by gyratory or cone crushers	7/04	. . with concentric circles of intermeshing teeth
2/02	. eccentrically moved	7/06	. . with horizontal axis (B02C 7/04 takes precedence)
2/04	. . with vertical axis	7/08	. . with vertical axis (B02C 7/04 takes precedence)
2/06	. . . and with top bearing	7/10	. with eccentric discs
2/08	. . with horizontal axis	7/11	. Details
2/10	. concentrically moved; Bell crushers	7/12	. . Shape or construction of discs
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)	7/13	. . . for grain mills
4/02	. with two or more rollers	7/14	. . Adjusting, applying pressure to, or controlling distance between, discs
4/04	. . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	7/16	. . Driving mechanisms
4/06	. . specially adapted for milling grain	7/17	. . Cooling or heating of discs
4/08	. . with co-operating corrugated or toothed crushing-rollers	7/175	. Disc mills specially adapted for paste-like material, e.g. paint, chocolate, colloids
4/10	. with a roller co-operating with a stationary member	7/18	. Disc mills specially adapted for grain
4/12	. . in the form of a plate	9/00	Other milling methods or mills specially adapted for grain
4/14	. . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	9/02	. Cutting or splitting grain
4/16	. . . specially adapted for milling grain	9/04	. Systems or sequences of operations; Plant
4/18	. . in the form of a bar	11/00	Other auxiliary devices or accessories specially adapted for grain mills
4/20	. . . wherein the roller is corrugated or toothed	11/02	. Breaking up amassed particles, e.g. flakes
4/22	. . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	11/04	. Feeding devices
4/24	. . . specially adapted for milling grain	11/06	. Arrangements for preventing fire or explosion (methods for preventing or extinguishing fires, devices therefor A62C)
4/26	. . in the form of a grid or grating	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)
4/28	. Details		
4/30	. . Shape or construction of rollers		
4/32	. . Adjusting, applying pressure to, or controlling the distance between, milling members		

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**