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
- Auxiliary methods, accessories....23/00

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

1/02 • Jaw crushers or pulverisers
1/04 • • with single-acting jaws
1/06 • • with double-acting jaws
1/08 • • with jaws coacting with a rotating roller
1/10 • • Shape or construction of jaws
1/12 • Mills with non-rotating spiked members
1/14 • Stamping mills

2/00 Crushing or disintegrating by gyratory or cone crushers

2/02 • eccentrically moved
2/04 • • with vertical axis
2/06 • • • and with top bearing
2/08 • • with horizontal axis
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)

4/02 • with two or more rollers
4/04 • • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
4/06 • • specially adapted for milling grain
4/08 • • with co-operating corrugated or toothed crushing-rollers
4/10 • with a roller co-operating with a stationary member
4/12 • • in the form of a plate
4/14 • • • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
4/16 • • • specially adapted for milling grain
4/18 • • in the form of a bar
4/20 • • • wherein the roller is corrugated or toothed
4/22 • • • specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
4/24 • • • specially adapted for milling grain
4/26 • • in the form of a grid or grating
4/28 • Details
4/30 • • Shape or construction of rollers
4/32 • • Adjusting, applying pressure to, or controlling the distance between, milling members
4/34 • • • in mills wherein a roller co-operates with a stationary member
4/36 • • • in mills specially adapted for paste-like materials
4/38 • • • in grain mills
4/40 • • Detachers, e.g. scrapers
4/42 • • Driving mechanisms; Roller speed control
4/44 • • Cooling or heating rollers or bars

7/00 Crushing or disintegrating by disc mills (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively A23G 1/04)

7/02 • with coaxial discs
7/04 • • with concentric circles of intermeshing teeth
7/06 • • with horizontal axis (B02C 7/04 takes precedence)
7/08 • • with vertical axis (B02C 7/04 takes precedence)
7/10 • with eccentric discs
7/11 • Details
7/12 • • Shape or construction of discs
7/13 • • • for grain mills
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

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**