

## B 02 CRUSHING, PULVERISING, OR DISINTEGRATING; PREPARATORY TREATMENT OF GRAIN FOR MILLING

### B 02 B PREPARING GRAIN FOR MILLING; REFINING GRANULAR FRUIT TO COMMERCIAL PRODUCTS BY WORKING THE SURFACE (making dough from cereals directly A 21 C; preservation or sterilisation of cereals A 23 B; cleaning fruit A 23 N; preparation of malt C 12 C)

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| <p><b>1/00</b> Preparing grain for milling or like processes (hulling, husking, decorticating, polishing, removing the awns, or degerming 3/00)</p> <p>1/02 . Dry treatment (sifting or sorting in general B 07)</p> <p>1/04 . Wet treatment, e.g. washing, wetting, softening</p> <p>1/06 . . Devices with rotary parts</p> <p>1/08 . Conditioning grain with respect to temperature or water content (air conditioning or ventilating of silos F 24 F; drying apparatus F 26 B; hygrometers G 01 N)</p> <p><b>3/00</b> <b>Hulling; Husking; Decorticating</b> (decorticating textile fibres D 01 B 1/14); <b>Polishing; Removing the awns</b> (in threshing machines A 01 F 12/42); <b>Degerming</b></p> <p>3/02 . by means of discs</p> | <p>3/04 . by means of rollers</p> <p>3/06 . by means of screws or worms</p> <p>3/08 . by means of beaters or blades</p> <p>3/10 . by means of brushes</p> <p>3/12 . by means of fluid</p> <p>3/14 . Producing flour or meal directly</p> <p><b>5/00</b> <b>Grain treatment not otherwise provided for</b></p> <p>5/02 . Combined processes</p> <p><b>7/00</b> <b>Auxiliary devices</b></p> <p>7/02 . Feeding or discharging devices</p> |
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### B 02 C CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN (obtaining metallic powder by crushing, grinding or milling B 22 F 9/04)

#### Subclass Index

#### DISINTEGRATING IN GENERAL

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|--|---------------------|
| 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

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| <p><b>1/00</b> <b>Crushing or disintegrating by reciprocating members</b></p> <p>1/02 . Jaw crushers or pulverisers</p> <p>1/04 . . with single-acting jaws</p> <p>1/06 . . with double-acting jaws</p> <p>1/08 . . with jaws coacting with a rotating roller</p> <p>1/10 . . Shape or construction of jaws</p> <p>1/12 . Mills with non-rotating spiked members</p> <p>1/14 . Stamping mills</p> <p><b>2/00</b> <b>Crushing or disintegrating by gyratory or cone crushers</b></p> <p>2/02 . eccentrically moved</p> <p>2/04 . . with vertical axis</p> <p>2/06 . . . and with top bearing</p> <p>2/08 . . with horizontal axis</p> <p>2/10 . concentrically moved; Bell crushers</p> | <p><b>4/00</b> <b>Crushing or disintegrating by roller mills</b> (with milling members in the form of rollers or balls co-operating with rings or discs 15/00; roller mills or roll refiners exclusively for chocolate A 23 G 1/10, 1/12)</p> <p>4/02 . with two or more rollers</p> <p>4/04 . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids</p> <p>4/06 . . specially adapted for milling grain</p> <p>4/08 . . with co-operating corrugated or toothed crushing-rollers</p> <p>4/10 . with a roller co-operating with a stationary member</p> <p>4/12 . . in the form of a plate</p> <p>4/14 . . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids</p> <p>4/16 . . . specially adapted for milling grain</p> <p>4/18 . . in the form of a bar</p> <p>4/20 . . . wherein the roller is corrugated or toothed</p> <p>4/22 . . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids</p> |
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- 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 [A 23 G 1/04](#))
  - 7/02 . with coaxial discs
  - 7/04 . . with concentric circles of intermeshing teeth
  - 7/06 . . with horizontal axis ([7/04](#) takes precedence)
  - 7/08 . . with vertical axis ([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 [A 62 C](#))
  - 11/08 . Cooling, heating, ventilating, conditioning with respect to temperature or water content (conditioning grain before milling [B 02 B 1/08](#); air-conditioning or ventilating in general [F 24 F](#))
- 13/00 Disintegrating by mills having rotary beater elements**
  - 13/02 . with horizontal rotor shaft (with axial flow [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 ([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 ([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 [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 B 26 D); Mincing machines or similar apparatus using worms or the like** (machines for domestic use not covered otherwise A 47 J 43/04; multi-purpose machines for preparing food A 47 J 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
  - 18/40 . specially adapted for disintegrating garbage, waste, or sewage
  - 18/42 . . and mounted in, or with, kitchen sinks
  - 18/44 . specially adapted for disintegrating plastics, e.g. cinematographic films
- 19/00 Other disintegrating devices or methods** (for grain 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 B 04 B)
  - 19/12 . specially adapted for specific materials not otherwise provided for
  - 19/14 . . specially adapted for breaking-up bottles
  - 19/16 . Mills provided with vibrators (tumbling mills 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 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 the preceding groups or not specially adapted to apparatus covered by a single preceding group** (separating or sorting in general B 03, B 04, B 07)
  - 23/02 . Feeding devices (transport devices in general B 65 G)
  - 23/04 . Safety devices (in general F 16 P)
  - 23/06 . Selection or use of additives to aid disintegrating
  - 23/08 . Separating or sorting of material, associated with crushing or disintegrating (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 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 (23/38, 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 (23/34 takes precedence) [2]
    - 23/32 . . . with return of oversize material to crushing or disintegrating zone (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**