

B02C

CRUSHING, PULVERISING, OR DISINTEGRATING IN GENERAL; MILLING GRAIN ({household tools and machines for pulverising foodstuffs, e.g. coffee and spice mills [A47J 42/00](#); pharmaceutical mortars [A61J 3/02](#); mechanical processing of refuse and garbage [B03B 9/06](#); dressing mould materials by grinding [B22C 5/04](#)}; obtaining metallic powder by crushing, grinding or milling [B22F 9/04](#); {recovery of plastics by disintegrating [B29B 17/00](#); crushing raw materials in starch making [C08B 30/02](#); beaters for papermaking [D21D 1/02](#); crushing devices specially for transport in mines [E21F 13/002](#); slag crushing devices [F23J 1/00](#); fuel milling devices in combustion apparatus [F23K 1/00](#); household devices for crushing coal [F24B 15/02](#); ice disintegrating devices [F25C 5/02](#)})

Definition statement

This place covers:

- Apparatus and methods for crushing, pulverizing, comminuting, disintegrating by using reciprocating or rotary crushers, by using rollers or balls, discs or rotary beaters, by tumbling, by using knives or other cutting or tearing members, by using fluid jets.
- Auxiliary devices, accessories for such devices e.g. safety, and auxiliary methods.
- Whole disintegration plants.
- Control arrangements for crushing or disintegrating.
- Combinations of such apparatus with other devices, e.g. for separating or sorting.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Preparing specimens for investigation involving mechanical work, e.g. chopping, disintegrating, compacting, homogenising | G01N 1/286 |
|--|----------------------------|

B02C 1/00

Crushing or disintegrating by reciprocating members

Definition statement

This place covers:

Crushing where the crushing or disintegrating members are only reciprocating.

B02C 1/12

Mills with non-rotating spiked members

References

Limiting references

This place does not cover:

| | |
|---|------------------------------|
| Disintegrating devices with spiked members specially adapted for breaking-up bottles: | B02C 19/0081 |
|---|------------------------------|

B02C 2/00

Crushing or disintegrating by gyratory or cone crushers {(with non-coaxial discs with intersecting axes [B02C 7/005](#))}

Definition statement

This place covers:

Crushers with a gyrating conical head and a bowl assembly surrounding the head; normally the head is driven.

References

Limiting references

This place does not cover:

| | |
|---|----------------------------|
| Cone crushers with non-coaxial discs with intersecting axes | B02C 7/005 |
|---|----------------------------|

B02C 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](#))

Definition statement

This place covers:

Roller mills with two or more rollers; with a roller co-operating with a stationary member like a plate, a bar a grid or grating or co-operating with a conveyor.

References

Limiting references

This place does not cover:

| | |
|--|----------------------------|
| Roller mills with milling members in the form of rollers or balls co-operating with rings or discs | B02C 15/00 |
|--|----------------------------|

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|---|---|
| Roller mills or roll refiners exclusively for chocolate | A23G 1/10 , A23G 1/12 |
| Presses characterised by the use of rotary pressing members, e.g. rollers, rings, discs | B30B 3/00 |

Special rules of classification

In the cases where the roller mill is adapted for milling a paste-like material or grain, the document is classified in the appropriate subgroup of [B02C 4/00](#), e.g. [B02C 4/04](#), [B02C 4/06](#), [B02C 4/22](#). For searching, other classes, where the roller mill is not adapted for the specific material concerned, have to be considered.

B02C 7/00

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

Definition statement

This place covers:

Disc mills used to grind, fiberize, pulverize, granulate or refine a feedstock which is fed between opposing discs or plates. The discs may be grooved, serrated or spiked.

References**Limiting references**

This place does not cover:

| | |
|---|---------------------------|
| Apparatus specially adapted for manufacture or treatment of cocoa or cocoa products | A23G 1/04 |
|---|---------------------------|

B02C 7/12

Shape or construction of discs

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Discs for disc mills for refining paper pulp | D21D 1/306 |
|--|----------------------------|

B02C 9/00

Other milling methods or mills specially adapted for grain

Definition statement

This place covers:

Methods or mills, systems, plants or sequences of operations specially adapted for grain with the meaning of cereal grain.

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Combined processes for grain treatment | B02B 5/02 |
|--|---------------------------|

B02C 11/00**Other auxiliary devices or accessories specially adapted for grain mills****Definition statement**

This place covers:

All auxiliary devices and accessories specially adapted for grain mills like disagglomerators, special sifting and separating, feeding, cooling, heating, conditioning arrangements.

B02C 13/00**Disintegrating by mills having rotary beater elements{; Hammer mills}****Definition statement**

This place covers:

Mills with beaters rigidly connected or hinged for swinging movement to a horizontally or vertically arranged rotor for crushing material by impact. The material may be thrown against an anvil or impact member.

References**Limiting references**

This place does not cover:

| | |
|---|------------------------------|
| 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 gra) | B02C 19/0012 |
|---|------------------------------|

B02C 13/22**with intermeshing pins{; Pin Disk Mills}****Special rules of classification**

Mills with intermeshing elements like pins or other impact members, where both disks are rotating, are additionally classified in [B02C 13/205](#).

B02C 15/00**Disintegrating by milling members in the form of rollers or balls co-operating with rings or discs {(high-speed drum mills [B02C 19/11](#))}****Definition statement**

This place covers:

Mills with rollers or balls co-operating with stationary or rotating rings arranged according to the titles of the sub-groups; many for coal or ore.

References**Informative references**

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Cocoa; Cocoa products, e.g. chocolate; Substitutes therefore; Mixing apparatus; Roller mills for preparing chocolate | A23G 1/10 |
|--|---------------------------|

| | |
|--|----------------------------|
| Selective separation of solid materials carried by, or dispersed in, gas currents using centrifugal force | B07B 7/08 |
| Selective separation of solid materials carried by, or dispersed in, gas currents, gas currents using centrifugal force, generated by rotating vanes, discs, drums, or brushes | B07B 7/083 |
| Machines or devices specially designed for dressing or handling the mould material so far as specially adapted for that purpose by grinding, blending, mixing, kneading, or stirring | B22C 5/04 |
| Casting in, on, or around objects which form part of the product; for manufacturing or repairing tools | B22D 19/06 |
| Preparation of lump or pulverulent fuel in readiness for delivery to combustion apparatus | F23K 1/00 |

B02C 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](#)}; drums for polishing or grinding [B24B](#)})

Definition statement

This place covers:

Mills having a rotating, perforated or un-perforated or a fixed container, charged with the material to be disintegrated, with or without special disintegrating members such as pebbles or balls, and/or with or without special stirring means; feeding and discharging devices with the associated sorting or separating arrangements.

Shape, material of grinding media, e.g. balls, pebbles, rods.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|----------------------------|
| Medicinal preparations characterised by special physical form; Particulate form, e.g. powders | A61K 9/14 |
| Mixing | B01F |
| Machines or devices designed for polishing or abrading surfaces on work by means of tumbling apparatus or other apparatus in which the work and/or the abrasive material is loose; Accessories therefore; involving rotary barrels | B24B 31/02 |

Special rules of classification

Discharging devices combined with sorting or separating of material, as well as adding fluid, other than for crushing by fluid energy are classified in the appropriate sub-groups of [B02C 17/1835](#) and [B02C 17/186](#) and not in the sub-groups of [B02C 23/08](#) and [B02C 23/18](#). For searching the [B02C 23/00](#) and subgroups should be considered.

B02C 18/00

Disintegrating by knives or other cutting or tearing members which chop material into fragments {(tree stump comminutors [A01G 23/067](#))}

Definition statement

This place covers:

- Shredding of material into fragments; knives therefore and mountings thereof; feed or discharge means therefore.
- Mincing machines with perforated discs and feeding worms.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|-----------------------------|
| Cutting apparatus specially adapted for cutting hay, straw or the like | A01F 29/005 |
| Cutting implements specially adapted for horticultural purposes, for comminuting plant waste | A01G 3/002 |
| Forestry; extracting or eliminating stumps by comminuting the tree stumps | A01G 23/067 |
| Fodder distributors with mixer or shredder | A01K 5/001 |
| Processing meat, poultry or fish | A22C |
| Fodder mashers | A23N 17/02 |
| Kitchen equipment; coffee mills; spice mills; apparatus for making beverages | A47J |
| Machines for domestic use not covered elsewhere, e.g. for grinding, mixing, stirring, kneading, emulsifying, whipping or beating foodstuffs, e.g. power-driven | A47J 43/04 |
| Cutting; Details common to machines for perforating, punching, cutting-out, stamping-out or severing | B26D |
| Cutting through work characterised by the nature or movement of the cutting member; Apparatus or machines therefore; Cutting members therefore | B26D 1/00 |
| Manufacture of wood shavings, chips, powder, or the like | B27L 11/00 |
| Working of plastics; Conditioning or physical treatment of the material to be shaped by grinding, e.g. by triturating; by sieving; by filtering | B29B 13/10 |
| Recovery of plastics or other constituents of waste material containing plastics; Disintegrating plastic | B29B 17/04 |
| Disintegrating apparatus specially adapted for installation in waste pipes or outlets | E03C 1/2665 |
| Pumps adapted for handling specific fluids with means for comminuting, mixing stirring or otherwise treating | F04D 7/045 |

B02C 18/16

Details

Definition statement

This place covers:

Details in relation to the shredder housing, jam prevention, safety, lubrication of the knives and the like.

References

Limiting references

This place does not cover:

| | |
|--|-----------------------------|
| Disintegrating by knives or other cutting or tearing members which chop materials into fragments, specially adapted for disintegrating documents | B02C 18/007 |
|--|-----------------------------|

B02C 19/00

Other disintegrating devices or methods (for grain [B02C 9/00](#))

Definition statement

This place covers:

- Crushing by endless flexible members; by collision of materials against a breaking surface or breaking body and/or by friction between the material particles;
- Disintegrating devices or methods specially adapted for specific materials;
- Jet mills; pestle and mortar arrangements; mills in which a friction block is towed along the surface; mills provided with vibrators; use of auxiliary physical effects, e.g. ultrasonics, irradiation, cold or heat for disintegrating; grating; crushing mills with screw-shaped crushing means.

References

Limiting references

This place does not cover:

| | |
|-----------------------------|---|
| Rotors with beater elements | B02C 13/09 , B02C 13/14 |
|-----------------------------|---|

B02C 19/0068

{specially adapted for breaking-up fluorescent tubes}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

| | |
|--|---------------------------|
| Recovery of material from discharge tubes or lamps | H01J 9/52 |
|--|---------------------------|

B02C 19/0081**{specially adapted for breaking-up bottles}****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

| | |
|---|----------------------------|
| Presses specially adapted for consolidating empty containers, e.g. cans | B30B 9/321 |
|---|----------------------------|

B02C 19/08**Pestle and mortar****References****Informative references***Attention is drawn to the following places, which may be of interest for search:*

| | |
|-----------------------------------|-----------------------------|
| Pill breaking or crushing devices | A61J 7/0007 |
|-----------------------------------|-----------------------------|

B02C 21/00**Disintegrating plant with or without drying of the material (for grain [B02C 9/04](#))****Definition statement***This place covers:*

Disintegrating plants normally with at least two disintegration devices; transportable disintegration plants may be equipped solely with one crusher or disintegration device.

References**Limiting references***This place does not cover:*

| | |
|--|---------------------------|
| Milling plants specially adapted for grain | B02C 9/04 |
|--|---------------------------|

Informative references*Attention is drawn to the following places, which may be of interest for search:*

| | |
|--|-----------------------------|
| Cutting implements specially adapted for horticultural purposes, for comminuting plant waste | A01G 3/002 |
| Forestry; extracting or eliminating stumps by comminuting the tree stumps | A01G 23/067 |
| Transportable screening plants | B07B 1/005 |
| Crushing, pulverising or disintegrating apparatus | E01C 19/05 |

B02C 23/00

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 ({specially adapted for grain mills [B02C 11/00](#);} separating or sorting in general [B03](#), [B04](#), [B07](#))

Definition statement

This place covers:

Feeding devices, safety devices, disintegrating additives, separating or sorting of material associated with crushing or disintegrating, adding fluid, liquids or gases which are not intended for crushing or disintegrating.

References

References out of a residual place

Examples of places in relation to which this place is residual:

| | |
|--|-----------------------------|
| Feeding devices for gyratory or cone crushers | B02C 2/007 |
| Feeding devices for roller mills | B02C 4/286 |
| Feeding devices specially adapted for grain mills | B02C 11/04 |
| Arrangements for preventing fire or explosion in grain mills | B02C 11/06 |
| Feeding or discharge for mills having rotary beater elements | B02C 13/286 |
| Safety devices or measures for mills having rotary beater elements | B02C 13/31 |
| Feeding or discharging devices for tumbling mills | B02C 17/183 |
| Feed or discharge means for disintegrators with knives or other cutting or tearing members | B02C 18/22 |

B02C 25/00

Control arrangements specially adapted for crushing or disintegrating

Definition statement

This place covers:

Overall control arrangements and methods.

References

Limiting references

This place does not cover:

| | |
|--|----------------------------|
| Jaw clearance or overload control for jaw crushers | B02C 1/025 |
| Crushing or disintegrating by gyratory or cone crushers moved by an eccentric weight | B02C 2/042 |
| Crushing or disintegrating by gyratory or cone crushers eccentrically moved with vertical axis and with bowl adjusting or controlling mechanisms | B02C 2/045 |

| | |
|---|------------------------------|
| Adjusting, applying pressure to or controlling the distance between milling members in roller mills | B02C 4/32 |
| Driving mechanisms; Roller speed control in roller mills | B02C 4/42 |
| Controlling the distance between discs in disc mills | B02C 7/14 |
| Controlling the distance between discs in disc mills adapted for grain | B02C 7/186 |
| Monitoring devices for tumbling mills | B02C 17/1805 |