

CPC COOPERATIVE PATENT CLASSIFICATION

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 desintegration [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 desintegrating devices [F25C 5/02](#)})

1/00	Crushing or disintegrating by reciprocating members	4/14	. . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
1/005	. {hydraulically or pneumatically operated}	4/16	. . . specially adapted for milling grain
1/02	. Jaw crushers or pulverisers	4/18	. . in the form of a bar
1/025	. . {Jaw clearance or overload control}	4/20	. . . wherein the roller is corrugated or toothed
1/04	. . with single-acting jaws	4/22	. . . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids
1/043	. . . {with cooperating single acting jaws}		
1/046	. . . {of the plural stage type}	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 rotating roller	4/28	. Details
1/10	. . Shape or construction of jaws	4/283	. . {Lateral sealing shields}
1/12	. Mills with non-rotating spiked members	4/286	. . {Feeding devices}
1/14	. Stamping mills	4/30	. . Shape or construction of rollers
2/00	Crushing or disintegrating by gyratory or cone crushers {(with non-coaxial discs with intersecting axes B02C 7/005)}	4/305	. . . {Wear resistant rollers}
		4/32	. . Adjusting, applying pressure to, or controlling the distance between, milling members
2002/002	. {the bowl being a driven element for providing a crushing effect}	4/34	. . . in mills wherein a roller co-operates with a stationary member
2/005	. {Lining}	4/36	. . . in mills specially adapted for paste-like materials
2/007	. {Feeding devices}		
2/02	. eccentrically moved	4/38	. . . in grain mills
2/04	. . with vertical axis	4/40	. . Detachers, e.g. scrapers
2/042	. . . {Moved by an eccentric weight}	4/42	. . Driving mechanisms; Roller speed control
2/045	. . . {and with bowl adjusting or controlling mechanisms (B02C 2/042 , B02C 2/06 take precedence)}	4/423	. . . {with vibrating or oscillating mechanisms}
		4/426	. . . {Torque counterbalancing mechanisms}
		4/44	. . Cooling or heating rollers or bars
2/047	. . . {and with head adjusting or controlling mechanisms (B02C 2/042 , B02C 2/06 take precedence)}	7/00	Crushing or disintegrating by disc mills (apparatus specially adapted for manufacture or treatment of cocoa or cocoa products exclusively A23G 1/04)
2/06	. . . and with top bearing {(B02C 2/042 takes precedence)}	7/005	. {Crushers with non-coaxial toothed discs with intersecting axes}
2/08	. . with horizontal axis	7/02	. with coaxial discs
2/10	. concentrically moved; Bell crushers	7/04	. . with concentric circles of intermeshing teeth
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)	7/06	. . with horizontal axis (B02C 7/04 takes precedence)
4/02	. with two or more rollers	7/08	. . with vertical axis (B02C 7/04 takes precedence)
4/04	. . specially adapted for milling paste-like material, e.g. paint, chocolate, colloids	7/10	. with eccentric discs
4/06	. . specially adapted for milling grain	7/11	. Details
4/08	. . with co-operating corrugated or toothed crushing-rollers	7/12	. . Shape or construction of discs
4/10	. with a roller co-operating with a stationary member	7/13	. . . for grain mills
4/12	. . in the form of a plate	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	2013/1857	. . . . {rotating coaxially around the rotor shaft}
7/182	. . {with horizontal axis}	2013/1864	. . . . {rotatable around its own axis}
7/184	. . {with vertical axis}	2013/1871	. . . . {vertically adjustable}
7/186	. . {Adjusting, applying pressure to, or controlling distance between, discs}	2013/1878	. . . . {radially adjustable}
7/188	. . {Driving mechanisms}	2013/1885	. . . . {of dead bed type}
9/00	Other milling methods or mills specially adapted for grain	2013/1892	. . . . {cooled or heated}
9/02	. Cutting or splitting grain	13/20	. with two or more co-operating rotors
9/04	. Systems or sequences of operations; Plant	13/205	. . {arranged concentrically}
11/00	Other auxiliary devices or accessories specially adapted for grain mills	13/22	. with intermeshing pins; {Pin Disk Mills}
11/02	. Breaking up amassed particles, e.g. flakes	13/24	. . arranged around a vertical axis
11/04	. Feeding devices	13/26	. Details
11/06	. Arrangements for preventing fire or explosion (methods for preventing or extinguishing fires, devices therefor A62C)	13/28	. . Shape or construction of beater elements
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)	13/2804	. . . {the beater elements being rigidly connected to the rotor}
13/00	Disintegrating by mills having rotary beater elements; {Hammer mills}	2013/2808	. . . {the beater elements are attached to disks mounted on a shaft}
13/02	. with horizontal rotor shaft (with axial flow B02C 13/10)	2013/2812	. . . {the beater elements are attached to a hollow cylindrical rotor}
13/04	. . with beaters hinged to the rotor; Hammer mills	2013/2816	. . . {of chain, rope or cable type}
13/06	. . with beaters rigidly connected to the rotor	13/282	. . Shape or inner surface of mill-housings
13/08	. . . and acting as a fan	2013/2825	. . . {with fastening means for fixing lining members to the inner surface of mill-housings}
13/09	. . . and throwing the material against an anvil or impact plate {(with vertical axis B02C 13/1807)}	13/284	. . . Built-in screens
13/095	. . . . {with an adjustable anvil or impact plate}	13/286	. . Feeding or discharge
13/10	. with horizontal rotor shaft and axial flow	2013/28609	. . . {Discharge means}
13/12	. . with vortex chamber	2013/28618	. . . {Feeding means}
13/13	. with horizontal rotor shaft and combined with sifting devices, e.g. for making powdered fuel	2013/28627	. . . . {of ram or pusher type}
13/14	. with vertical rotor shaft, e.g. combined with sifting devices	2013/28636	. . . . {of conveyor belt type}
2013/145	. . {with fast rotating vanes generating vortexes effecting material on material impact}	2013/28645	. . . . {of conveyor belt and cooperating roller type}
13/16	. . with beaters hinged to the rotor	2013/28654	. . . . {of screw type}
13/18	. . with beaters rigidly connected to the rotor	2013/28663	. . . . {using rollers}
13/1807	. . . {the material to be crushed being thrown against an anvil or impact plate (with horizontal axis B02C 13/09 ; centrifugal acceleration of material through radially extending channels B02C 19/0025 ; centrifugal acceleration of material by means of an open top rotor B02C 19/0031)}	2013/28672	. . . . {Feed chute arrangements}
13/1814	. . . . {by means of beater or impeller elements fixed on top of a disc type rotor}	2013/28681	. . . . {Feed distributor plate for vertical mill}
13/1821	. . . . . {the beater or impeller elements being rotatably fixed around their own axis}	2013/2869	. . . {Arrangements of feed and discharge means in relation to each other}
13/1828	. . . . . {with dead bed protected beater or impeller elements}	13/288	. . Ventilating, or influencing air circulation
13/1835	. . . . . {by means of beater or impeller elements fixed in between an upper and lower rotor disc}	2013/29	. . {devices for manipulating beater elements}
13/1842	. . . . . {with dead bed protected beater or impeller elements}	13/30	. . Driving mechanisms
13/185	. . . . . {Construction or shape of anvil or impact plate}	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 {(high-speed drum mills B02C 19/11)}
		15/001	. {Air flow directing means positioned on the periphery of the horizontally rotating milling surface}
		2015/002	. {combined with a classifier}
		15/003	. {Shape or construction of discs or rings}
		15/004	. {Shape or construction of rollers or balls}
		15/005	. . {Rollers or balls of composite construction}
		15/006	. {Ring or disc drive gear arrangement}
		15/007	. {Mills with rollers pressed against a rotary horizontal disc (with pendularly mounted rollers B02C 15/04)}
		2015/008	. {Roller drive arrangements}
		15/02	. Centrifugal pendulum-type mills
		15/04	. Mills with pressed pendularly-mounted rollers, e.g. spring pressed
		15/045	. . {pressed against the interior of a ring rotating in a vertical plane}

- 15/06 . Mills with rollers forced against the interior of a rotary ring, e.g. under spring action ([B02C 15/04 takes precedence](#))
- 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 {or rings} and interposed balls or rollers mounted like ball or roller bearings
 - 15/123 . . {with rings and interposed rollers}
- 2015/126 . . {of the plural stage type}
- 15/14 . Edge runners, e.g. Chile mills
- 2015/143 . . {each runner pivot carrying more than one runner}
- 2015/146 . . {Step-shaped runners}
- 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](#); {drums for polishing or grinding B24B})**
 - 17/002 . {with rotary cutting or beating elements}
 - 17/005 . {the charge being turned over by magnetic forces}
 - 17/007 . {specially adapted for disintegrating refuse}
 - 17/02 . with perforated container
 - 17/04 . with unperforated container
 - 17/06 . . with several compartments
 - 2017/065 . . . {with several compartments in the form of multiwell blocks}
 - 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 {(mills provided with vibrators in general [B02C 19/16](#))}
 - 17/16 . Mills in which a fixed container houses stirring means tumbling the charge
 - 17/161 . . {Arrangements for separating milling media and ground material}
 - 17/163 . . {Stirring means}
 - 2017/165 . . {with stirring means comprising more than one agitator}
 - 17/166 . . {of the annular gap type}
 - 17/168 . . {with a basket media milling device arranged in or on the container, involving therein a circulatory flow of the material to be milled}
 - 17/18 . Details
 - 17/1805 . . {Monitoring devices for tumbling mills}
 - 17/181 . . {Bearings specially adapted for tumbling mills}
 - 17/1815 . . {Cooling or heating devices}
 - 17/182 . . {Lids}
 - 17/1825 . . {Lifting devices ([lifting devices associated with the lining for containers B02C 17/22](#))}
- 17/183 . . {Feeding or discharging devices}
- 17/1835 . . . {Discharging devices combined with sorting or separating of material ([B02C 17/186 takes precedence](#))}
- 17/184 {with separator arranged in discharge path of crushing zone}
- 17/1845 {with return of oversize material to crushing zone}
- 17/185 {with more than one separator}
- 17/1855 {with separator defining termination of crushing zone, e.g. screen denying egress of oversize material}
- 17/186 . . . {Adding fluid, other than for crushing by fluid energy}
- 17/1865 {after crushing}
- 17/187 {with recirculation of material to crushing zone}
- 17/1875 {passing gas through crushing zone}
- 17/188 {characterised by point of gas entry or exit or by gas flow path}
- 17/1885 {the applied gas acting to effect material separation ([B02C 17/1895 takes precedence](#))}
- 17/189 {with return of oversize material to crushing zone ([B02C 17/1895 takes precedence](#))}
- 17/1895 {gas being recirculated to crushing zone}
- 17/20 . . Disintegrating members
- 17/205 . . . {Adding disintegrating members to the tumbling mill}
- 17/22 . . Lining for containers
- 17/225 . . . {using rubber or elastomeric material}
- 17/24 . . Driving mechanisms
- 18/00 Disintegrating by knives or other cutting or tearing members which chop material into fragments {(tree stump comminutors [A01G 23/067](#))}**
 - 18/0007 . {specially adapted for disintegrating documents}
 - 2018/0015 . . {for disintegrating CDs, DVDs and/or credit cards}
 - 2018/0023 . . {Switching devices}
 - 2018/003 . . {Removing clips, pins or staples before disintegrating}
 - 2018/0038 . . {Motor drives}
 - 2018/0046 . . {Shape or construction of frames, housings or casings}
 - 2018/0053 . . {hand-operated}
 - 2018/0061 . . {with compacting devices for the disintegrated material}
 - 2018/0069 . . {with stripping devices}
 - 18/0076 . {with cutting or tearing members fixed on endless flexible members ([without cutting or tearing members B02C 19/0006](#))}
 - 18/0084 . {specially adapted for disintegrating garbage, waste or sewage}
 - 18/0092 . . {for waste water or for garbage}
 - 18/02 . with reciprocating knives
 - 18/04 . . Details
 - 18/06 . with rotating knives
 - 18/062 . . {with rotor elements extending axially in close radial proximity of a concentrically arranged slotted or perforated ring}
 - 18/065 . . {within rotatable bowls, e.g. meat cutters}
 - 18/067 . . {Tub-grinders}

18/08	. . within vertical containers { (B02C 18/062, B02C 18/065 take precedence) }	18/26	. with knives which both reciprocate and rotate
18/083	. . . {with a disc rotor having generally radially extending slots or openings bordered with cutting knives}	18/28	. with spiked cylinders
18/086	. . . {specially adapted for disintegrating plastics, e.g. cinematographic films (for plastic bottles B02C 19/0093 , disintegrating plastics B29B 17/00)}	18/30	. Mincing machines with perforated discs and feeding worms
18/10	. . . with drive arranged above container { (B02C 18/083 takes precedence) }	18/301	. . {with horizontal axis}
18/12	. . . with drive arranged below container { (B02C 18/083 takes precedence) }	18/302	. . . {with a knife-perforated disc unit}
18/14	. . within horizontal containers { (B02C 18/062, B02C 18/065 take precedence) }	18/304	. . . {with several axially aligned knife-perforated disc units}
18/141	. . . {with axial flow}	18/305	. . {Details}
18/142	. . . {with two or more inter-engaging rotatable cutter assemblies}	2018/307	. . . {Cooling arrangements in mincing machines}
18/143	. . . {with a disc rotor having generally radially extending slots or openings bordered with cutting knives}	2018/308	. . {with separating devices for hard material, e.g. bone}
18/144	. . . {with axially elongated knives}	18/32	. . with sharpening devices
18/145	. . . {with knives spaced axially and circumferentially on the periphery of a cylindrical rotor unit}	18/34	. . with means for cleaning the perforated discs
18/146	. . . {with a rotor comprising a plurality of axially contiguous disc-like segments each having at least one radially extending cutting element}	18/36	. . Knives or perforated discs
2018/147	. . . {of the plural stage type}	18/362	. . . {Knives}
18/148	. . . {specially adapted for disintegrating plastics, e.g. cinematographic films (for plastic bottles B02C 19/0093 , disintegrating plastics B29B 17/00)}	18/365	. . . {Perforated discs}
18/16	. . Details	2018/367	. . . {Resiliently mounted knives or discs}
2018/162	. . . {Shape or inner surface of shredder-housings}	18/38	. . Drives
2018/164	. . . {Prevention of jamming and/or overload}	19/00	Other disintegrating devices or methods (for grain B02C 9/00)
2018/166	. . . {Lubricating the knives of the cutting mechanisms}	19/0006	. {Crushing by endless flexible members (with cutting or tearing members B02C 18/0076)}
2018/168	. . . {User safety devices or measures in shredders}	19/0012	. {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 grain)}
18/18	. . . Knives; Mountings thereof	19/0018	. . {using a rotor accelerating the materials centrifugally against a circumferential breaking surface (rotors with beater elements B02C 13/09, B02C 13/1807)}
18/182	. . . . {Disc-shaped knives}	19/0025	. . . {by means of a rotor with radially extending channels}
18/184	. . . . . {with peripherally arranged demountable cutting tips or elements}	19/0031	. . . {by means of an open top rotor}
18/186	. . . . {Axially elongated knives}	19/0037	. . . . {with concentrically arranged open top rotors}
2018/188	. . . . {Stationary counter-knives; Mountings thereof}	19/0043	. . {the materials to be pulverised being projected against a breaking surface or breaking body by a pressurised fluid (jet mills B02C 19/06)}
18/20	. . . . Sickie-shaped knives	19/005	. . {the materials to be pulverised being disintegrated by collision of, or friction between, the material particles (jet mills B02C 19/06)}
18/22	. . . Feed or discharge means	19/0056	. {specially adapted for specific materials not otherwise provided for}
2018/2208	. . . . {for weblike material}	19/0062	. . {specially adapted for shredding scrap metal, e.g. automobile bodies}
18/2216	. . . . {Discharge means}	19/0068	. . {specially adapted for breaking-up fluorescent tubes}
18/2225	. . . . {Feed means}	19/0075	. . {specially adapted for desintegrating medical waste (disposal of medical waste B09B 3/0075 , sterilisation of refuse A61L 11/00)}
18/2233	. . . . . {of ram or pusher type}	19/0081	. . {specially adapted for breaking-up bottles}
18/2241	. . . . . {of conveyor belt type (B02C 18/225 takes precedence)}	19/0087	. . . {for glass bottles}
18/225	. . . . . {of conveyor belt and cooperating roller type}	19/0093	. . . {for plastic bottles}
18/2258	. . . . . {of screw type}	19/06	. Jet mills
18/2266	. . . . . {of revolving drum type}	19/061	. . {of the cylindrical type (B02C 19/068 takes precedence)}
18/2275	. . . . . {using a rotating arm}	19/063	. . {of the toroidal type (B02C 19/068 takes precedence)}
18/2283	. . . . . {using rollers (B02C 18/225 takes precedence)}	19/065	. . {of the opposed-jet type (B02C 19/068 takes precedence)}
18/2291	. . . . . {Feed chute arrangements}	19/066	. . {of the jet-anvil type (B02C 19/068 takes precedence)}
18/24	. . . Drives		

19/068	. . {of the fluidised-bed type}	23/26	. . . characterised by point of gas entry or exit or by gas flow path
19/08	. Pestle and mortar	23/28	. . . gas moving means being integral with, or attached to, crushing or disintegrating element
19/10	. Mills in which a friction block is towed along the surface of a cylindrical or annular member	23/30	. . . the applied gas acting to effect material separation (B02C 23/34 takes precedence)
19/11	. High-speed drum mills (for separating B04B)	23/32	. . . with return of oversize material to crushing or disintegrating zone (B02C 23/34 takes precedence)
19/16	. Mills provided with vibrators ({ roller mills B02C 4/423 }; tumbling mills B02C 17/14)	23/34	. . . gas being recirculated to crushing or disintegrating zone
19/18	. Use of auxiliary physical effects, e.g. ultrasonics, irradiation, for disintegrating	23/36	. . the crushing or disintegrating zone being submerged in liquid
2019/183	. . {Crushing by discharge of high electrical energy}	23/38	. . in apparatus having multiple crushing or disintegrating zones
19/186	. . {Use of cold or heat for disintegrating (B02C 4/44 , B02C 7/17 , B02C 11/08 take precedence)}	23/40	. . with more than one means for adding fluid to the material being crushed or disintegrated
19/20	. Disintegrating by grating ({ domestic food grating devices A47J 43/25 })		
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)	25/00	Control arrangements specially adapted for crushing or disintegrating
21/002	. {using a combination of a roller mill and a drum mill}	2201/00	Codes relating to disintegrating devices adapted for specific materials
21/005	. . {the roller mill having cooperating rollers}	2201/02	. for reinforced concrete
21/007	. {using a combination of two or more drum or tube mills}	2201/04	. for used tyres
21/02	. Transportable disintegrating plant	2201/06	. for garbage, waste or sewage
2021/023	. . {for disintegrating material on the surface of the ground}	2201/063	. . for waste water or sewage
21/026	. . {self-propelled}	2201/066	. . for garden waste
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)	2210/00	Codes relating to different types of disintegrating devices
23/02	. Feeding devices ({ for grain mills B02C 11/04 ; for roller mills B02C 4/286 }; transport devices in general B65G)	2210/01	. Indication of wear on beaters, knives, rollers, anvils, linings and the like
23/04	. Safety devices (in general F16P ; { for rotary mills B02C 13/31 })	2210/02	. Features for generally used wear parts on beaters, knives, rollers, anvils, linings and the like
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; { beater mills combined with sifting devices B02C 13/13 , B02C 13/14 ; for tumbling mills B02C 17/1835 })		
23/10	. . with separator arranged in discharge path of crushing or disintegrating zone		
23/12	. . . with return of oversize material to crushing or disintegrating zone		
23/14	. . with more than one separator		
23/16	. . with separator defining termination of crushing or disintegrating zone, e.g. screen denying egress of oversize material		
2023/165	. . . {Screen denying egress of oversize material}		
23/18	. Adding fluid, other than for crushing or disintegrating by fluid energy ({ for tumbling mills B02C 17/186 }; feeding devices B02C 23/02)		
23/20	. . after crushing or disintegrating		
23/22	. . . with recirculation of material to crushing or disintegrating zone		
23/24	. . Passing gas through crushing or disintegrating zone ({ B02C 15/001 }, B02C 23/38 , B02C 23/40 take precedence)		