

CPC COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING (NOTE omitted)

LIGHTING; HEATING

F23 COMBUSTION APPARATUS; COMBUSTION PROCESSES (NOTE omitted)

F23G CREMATION FURNACES; CONSUMING WASTE PRODUCTS BY COMBUSTION

NOTE

This subclass covers also the burning of low-grade fuel of solid, liquid, or gaseous nature.

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| <p>1/00 Furnaces for cremation of human or animal carcasses</p> <p>5/00 Incineration of waste (of specific waste F23G 7/00); Incinerator constructions; Details, accessories or control therefor</p> <p>5/002 . {characterised by their grates (F23G 5/05 takes precedence)}</p> <p>5/004 . . {with endless travelling grates}</p> <p>5/006 . {General arrangement of incineration plant, e.g. flow sheets}</p> <p>5/008 . {adapted for burning two or more kinds, e.g. liquid and solid, of waste being fed through separate inlets}</p> <p>5/02 . with pretreatment</p> <p>5/027 . . pyrolysing or gasifying stage (pyrolysis of sludge C02F 11/00; destructive distillation of carbonaceous materials C10B 53/00)</p> <p>5/0273 . . . {using indirect heating}</p> <p>5/0276 . . . {using direct heating}</p> <p>5/033 . . comminuting or crushing</p> <p>5/04 . . drying</p> <p>5/05 . . . using drying grates</p> <p>5/08 . having supplementary heating</p> <p>5/085 . . {High-temperature heating means, e.g. plasma, for partly melting the waste}</p> <p>5/10 . . electric</p> <p>5/12 . . using gaseous or liquid fuel (F23G 5/14 takes precedence)</p> <p>5/14 . . including secondary combustion</p> <p>5/16 . . . in a separate combustion chamber</p> <p>5/165 {arranged at a different level}</p> <p>5/18 . . . in a stack</p> <p>5/20 . having rotating or oscillating drums</p> <p>5/22 . . the drums being conically shaped</p> <p>5/24 . having a vertical, substantially cylindrical, combustion chamber</p> <p>5/245 . . {with perforated bottom or grate}</p> <p>5/26 . . having rotating bottom</p> <p>5/28 . . having raking arms</p> <p>5/30 . having a fluidised bed</p> <p>5/32 . the waste being subjected to a whirling movement, e.g. cyclonic incinerators</p> <p>5/34 . the waste being burnt in a pit or arranged in a heap for combustion</p> | <p>5/36 . having a conical combustion chamber, e.g. "teepee" incinerators (F23G 5/22 takes precedence)</p> <p>5/38 . Multi-hearth arrangements</p> <p>5/40 . Portable or mobile incinerators</p> <p>5/42 . . of the basket type</p> <p>5/44 . Details; Accessories</p> <p>5/442 . . {Waste feed arrangements}</p> <p>5/444 . . . {for solid waste (F23G 5/448 takes precedence)}</p> <p>5/446 . . . {for liquid waste (F23G 5/448 takes precedence)}</p> <p>5/448 . . . {in which the waste is fed in containers or the like}</p> <p>5/46 . . Recuperation of heat</p> <p>5/48 . . Preventing corrosion</p> <p>5/50 . Control or safety arrangements</p> <p>7/00 Incinerators or other apparatus for consuming industrial waste, e.g. chemicals (incinerator closets A47K 11/02; oxidation of sludge C02F 11/06; burners in general, burner details F23D; incinerating radioactive waste G21F 9/00)</p> <p>7/001 . {for sludges or waste products from water treatment installations (F23G 5/008 takes precedence)}</p> <p>7/003 . {for used articles}</p> <p>7/005 . . {cars, vehicles}</p> <p>7/006 . . {wires, cables (production and refining of metals C22B, e.g. from scrap to produce non-ferrous metals C22B 7/00; salvaging material from cables H01B 15/003)}</p> <p>7/008 . {for liquid waste (waste oil F23G 7/05, waste liquors F23G 7/04, sludges F23G 7/001)}</p> <p>7/02 . of bagasse, megasse or the like</p> <p>7/04 . of waste liquors, e.g. sulfite liquors</p> <p>7/05 . of waste oils</p> <p>7/06 . of waste gases or noxious gases, e.g. exhaust gases (exhaust apparatus for engines with means for rendering the exhaust innocuous, e.g. by thermal or catalytic conversion, F01N 3/08; combustion of uncombusted material from primary combustion within apparatus for combustion of solid or fluent fuel F23B, {of non combusted material from primary combustion of solid fuels F23B 5/00; of gases produced by primary combustion of solid fuels F23B 90/04}, F23C)</p> <p>7/061 . . {with supplementary heating}</p> |
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7/063	. . . {electric heating}	2203/201	. . using oscillating movement
7/065	. . . {using gaseous or liquid fuel}	2203/202	. . rotating around substantially vertical axis
7/066 {preheating the waste gas by the heat of the combustion, e.g. recuperation type incinerator}	2203/203	. . with conically shaped drum
7/068 {using regenerative heat recovery means}	2203/204	. . having non-circular inner cross-section
7/07	. . in which combustion takes place in the presence of catalytic material	2203/205	. . with water-cooled wall
7/08	. . using flares, e.g. in stacks	2203/206	. . with charging ports in the sidewall
7/085	. . . {in stacks}	2203/207	. . with air supply ports in the sidewall
7/10	. of field or garden waste {or biomasses}	2203/208	. . with interior agitating members
7/105	. . {of wood waste}	2203/209	. . with variable inclination of rotation axis
7/12	. of plastics, e.g. rubber	2203/21	. . with variable speed of rotation
7/14	. of contaminated soil, e.g. by oil	2203/211	. . Arrangement of a plurality of drums
		2203/212	. . Sealing arrangements between rotary and stationnary parts
2200/00	Waste incineration	2203/30	. Cyclonic combustion furnace
2201/00	Pretreatment	2203/40	. Stationary bed furnace
2201/10	. Drying by heat	2203/401	. . with support for a grate or perforated plate
2201/101	. . using indirect heat transfer	2203/403	. . with substantial cylindrical combustion chamber
2201/20	. Dewatering by mechanical means	2203/50	. Fluidised bed furnace
2201/30	. Pyrolysing	2203/501	. . with external recirculation of entrained bed material
2201/301	. . Treating pyrogases	2203/502	. . with recirculation of bed material inside combustion chamber
2201/302	. . Treating pyrosolids	2203/503	. . with two or more fluidised beds
2201/303	. . Burning pyrogases	2203/504	. . with essentially horizontal flow of bed material
2201/304	. . Burning pyrosolids	2203/505	. . with fluidised bed rotated as a whole
2201/40	. Gasification	2203/60	. Mobile furnace
2201/50	. Devolatilising; from soil, objects	2203/601	. . carried by a vehicle
2201/60	. Separating	2203/70	. Modular furnace
2201/601	. . different calorific values	2203/80	. Furnaces with other means for moving the waste through the combustion zone
2201/602	. . different sizes	2203/801	. . using conveyors
2201/603	. . recyclible material	2203/8013	. . . Screw conveyors
2201/70	. Blending	2203/8016	. . . Belt conveyors
2201/701	. . with additives	2203/803	. . Rams or pushers
2201/702	. . with other waste	2203/805	. . using a rotating hearth
2201/80	. Shredding		
2201/90	. Cooling	2204/00	Supplementary heating arrangements
2202/00	Combustion	2204/10	. using auxiliary fuel
2202/10	. in two or more stages	2204/101	. . solid fuel
2202/101	. . with controlled oxidant supply	2204/103	. . gaseous or liquid fuel
2202/102	. . with supplementary heating	2204/20	. using electric energy
2202/103	. . in separate chambers	2204/201	. . Plasma
2202/104	. . with ash melting stage	2204/202	. . Laser
2202/105	. . with waste supply in stages	2204/203	. . Microwave
2202/106	. . with recirculation of unburned solid or gaseous matter into combustion chamber	2204/204	. . Induction
2202/20	. to temperatures melting waste	2205/00	Waste feed arrangements
2202/30	. in a pressurised chamber	2205/10	. using ram or pusher
2202/40	. in a pulsed combustion chamber	2205/101	. . sequentially operated
2202/50	. in a matrix bed combustion chamber	2205/12	. using conveyors
2202/60	. in a catalytic combustion chamber	2205/121	. . Screw conveyor
2202/70	. with application of specific energy	2205/122	. . Belt conveyor
2202/701	. . Electrical fields	2205/123	. . Roller conveyor
2202/703	. . Acoustic energy	2205/124	. . Chain conveyor
2203/00	Furnace arrangements	2205/125	. . Vibrating conveyor
2203/10	. Stoker grate furnace	2205/14	. using hopper or bin
2203/101	. with stepped or inclined grate	2205/16	. using chute
2203/103	. with roller grate	2205/18	. using airlock systems
2203/105	. with endless chain or travelling grate	2205/20	. using airblast or pneumatic feeding
2203/107	. with vibrating grate	2206/00	Waste heat recuperation
2203/20	. Rotary drum furnace	2206/10	. reintroducing the heat in the same process, e.g. for predrying

2206/20	• using the heat in association with another installation	2900/50006	• Combustion chamber walls reflecting radiant energy within the chamber
2206/201	• • with an industrial furnace	2900/50007	• Co-combustion of two or more kinds of waste, separately fed into the furnace
2206/202	• • with an internal combustion engine	2900/50008	• Combustion of waste suspended or lifted by upward gas flows
2206/203	• • with a power/heat generating installation	2900/50009	• Furnace with progressive waste movements in vertical or steeply inclined direction
2207/00	Control	2900/50201	• Waste pyrolysis, gasification or cracking by indirect heat transfer
2207/10	• Arrangement of sensing devices	2900/50202	• Waste pyrolysis, gasification or cracking in presence of catalysts
2207/101	• • for temperature	2900/50203	• Waste pyrolysis, gasification or cracking in a mechanically fluidised bed, e.g. obtained by a centrifugal force
2207/1015	• • • Heat pattern monitoring of flames	2900/50204	• Waste pre-treatment by pyrolysis, gasification or cracking
2207/102	• • for pressure	2900/50205	• Waste pre-treatment by pyrolysis, gasification or cracking followed by condensation of gas into combustible oil or fat
2207/103	• • for oxygen	2900/50206	• Pelletising waste before combustion
2207/104	• • for CO or CO ₂	2900/50207	• Thermoforming of plastic waste materials before combustion
2207/105	• • for NO _x	2900/50208	• Biologic treatment before burning, e.g. biogas generation
2207/106	• • for SO _x	2900/50209	• Compacting waste before burning
2207/107	• • for halogen concentration	2900/50211	• Evaporating, e.g. liquid waste before burning
2207/108	• • for hydrocarbon concentration	2900/50212	• Extruding waste before combustion
2207/112	• • for waste supply flowrate	2900/50213	• Preheating processes other than drying or pyrolysis
2207/113	• • for oxidant supply flowrate	2900/50214	• Separating non combustible matters
2207/114	• • for combustion bed level	2900/50401	• Drying waste by mixing with drying chemicals, e.g. with CaO
2207/20	• Waste supply	2900/508	• Providing additional energy for combustion, e.g. by using supplementary heating
2207/30	• Oxidant supply	2900/50801	• • using the heat from externally heated bodies, e.g. steel balls
2207/40	• Supplementary heat supply	2900/50802	• • using solid propellant
2207/50	• Cooling fluid supply	2900/50803	• • using solar energy
2207/60	• Additives supply	2900/50804	• • using thermit or other compositions of metal oxides as auxiliary fuel
2208/00	Safety aspects	2900/51001	• • using arc discharge electrodes to provide heat
2208/10	• Preventing or abating fire or explosion, e.g. by purging	2900/52001	• Rotary drums with co-current flows of waste and gas
2209/00	Specific waste	2900/52002	• Rotary drum furnaces with counter-current flows of waste and gas
2209/10	• Liquid waste	2900/52003	• Rotary drum furnaces with foramenous drum walls, e.g. grate drums
2209/101	• • Waste liquor	2900/53801	• Multi-hearth furnaces with vertical axis
2209/102	• • Waste oil	2900/54001	• Hearths or supports movable into and from the furnace, e.g. by a conveyor
2209/103	• • Bagasse, megasse	2900/54401	• Feeding waste in containers, bags or barrels
2209/12	• Sludge, slurries or mixtures of liquids	2900/54402	• Injecting fluid waste into incinerator
2209/14	• Gaseous waste or fumes	2900/54601	• using waste heat for desalinating sea water
2209/141	• • Explosive gases	2900/55	• Controlling; Monitoring or measuring
2209/142	• • Halogen gases, e.g. silane	2900/55001	• • Controlling combustion air preheating
2209/16	• Warfare materials, e.g. ammunition	2900/55002	• • Sensing exhaust gas opacity
2209/18	• Radioactive materials	2900/55003	• • Sensing for exhaust gas properties, e.g. O ₂ content
2209/20	• Medical materials	2900/55004	• • Sensing exhaust gas radioactivity
2209/22	• Waste papers	2900/55005	• • Sensing ash or slag properties
2209/24	• Contaminated soil; foundry sand	2900/55006	• • Measuring material flow rates
2209/26	• Biowaste	2900/55007	• • Sensors arranged in waste loading zone, e.g. feed hopper level
2209/261	• • Woodwaste	2900/55008	• • Measuring produced steam flow rate
2209/262	• • Agricultural waste		
2209/28	• Plastics or rubber like materials		
2209/281	• • Tyres		
2209/30	• Solid combustion residus, e.g. bottom or flyash		
2900/00	Special features of, or arrangements for incinerators		
2900/00001	• Exhaust gas recirculation (using the heat thereof F23G 2206/10)		
2900/50001	• Combination of two or more furnaces		
2900/50002	• Burning with downwards directed draft through the waste mass		
2900/50003	• Waste oxidation, pyrolysis or gasification in water under supercritical conditions		
2900/50004	• Furnace with inclined hearth		
2900/50005	• Waste in combustion chamber supported on bed made of special materials		

- 2900/55009 . . Controlling stoker grate speed or vibrations for waste movement
- 2900/55011 . . Detecting the properties of waste to be incinerated, e.g. heating value, density
- 2900/70 . . Incinerating particular products or waste
- 2900/7001 . . Air bags or seat belt pre-tensioners
- 2900/7002 . . Animal fat, e.g. lard, tallow, stearin
- 2900/7003 . . Incinerating litter from animals, e.g. poultry litter
- 2900/7004 . . Incinerating contaminated animal meals
- 2900/7005 . . Incinerating used asbestos
- 2900/7006 . . Incinerating used automobiles
- 2900/7007 . . Incinerating or pyrolysing used batteries
- 2900/7008 . . Incinerating remains of building materials after demolishing, e.g. fibreglass asphalt shingles
- 2900/7009 . . Incinerating human or animal corpses or remains
- 2900/7011 . . Incinerating PCB-materials
- 2900/7012 . . Incinerating rice or grain husks, hulls or bran
- 2900/7013 . . Incinerating oil shales
- 2900/70401 . . Incinerating drainage water from waste pits of incinerators
- 2900/70601 . Temporary storage means, e.g. buffers for accumulating fumes or gases, between treatment stages