

CPC COOPERATIVE PATENT CLASSIFICATION

C10B DESTRUCTIVE DISTILLATION OF CARBONAGEOUS MATERIALS FOR PRODUCTION OF GAS, COKE, TAR, OR SIMILAR MATERIALS ([cracking oils C10G](#); [underground gasification of minerals E21B 43/295](#))

Retort and coke ovens

1/00 Retorts

- 1/02 . Stationary retorts
- 1/04 . . Vertical retorts
- 1/06 . . Horizontal retorts
- 1/08 . . Inclined retorts
- 1/10 . Rotary retorts

3/00 Coke ovens with vertical chambers

- 3/02 . with heat-exchange devices

5/00 Coke ovens with horizontal chambers

- 5/02 . with vertical heating flues
- 5/04 . . with cross-over inter-connections
- 5/06 . with horizontal heating flues
- 5/08 . with horizontal and vertical heating flues
- 5/10 . with heat-exchange devices
- 5/12 . . with regenerators
- 5/14 . . . situated in the longitudinal direction of the chambers
- 5/16 with separated flues
- 5/18 . . . situated in the longitudinal direction of the oven battery
- 5/20 . . with recuperators

7/00 Coke ovens with mechanical conveying means for the raw material inside the oven

- 7/02 . with rotary scraping devices
- 7/04 . with shaking or vibrating devices
- 7/06 . with endless conveying devices
- 7/08 . . in vertical direction
- 7/10 . with conveyor-screws
- 7/12 . with tilting or rocking means
- 7/14 . with trucks, containers, or trays

9/00 Beehive ovens

11/00 Coke ovens with inclined chambers

13/00 Coke ovens with means for bringing and keeping the charge under mechanical pressure

15/00 Other coke ovens

- 15/02 . with floor heating

Heating of coke ovens

17/00 Preheating of coke ovens

19/00 Heating of coke ovens by electrical means

21/00 Heating of coke ovens with combustible gases

- 21/02 . with lean gas
- 21/04 . with rich gas
- 21/06 . in coke ovens suitable for the use of lean gas or rich gas
- 21/08 . by applying special heating gases
- 21/10 . Regulating and controlling the combustion

- 21/12 . . Burners
- 21/14 . . Devices for reversing the draught
- 21/16 . . by controlling or varying the openings between the heating flues and the regenerator flues
- 21/18 . . Recirculating the flue gases
- 21/20 . Methods of heating ovens of the chamber oven type
- 21/22 . . by introducing the heating gas and air at various levels
- 21/24 . . . at the top and the bottom of the vertical heating flues
- 21/26 . . by introducing the heating gas and air at the top of the vertical flues only

23/00 Other methods of heating coke ovens

25/00 Doors or closures for coke ovens

- 25/02 . Doors; Door frames
- 25/04 . . for ovens with vertical chambers
- 25/06 . . for ovens with horizontal chambers
- 25/08 . . Closing and opening the doors
- 25/10 . . . for ovens with vertical chambers
- 25/12 . . . for ovens with horizontal chambers
- 25/14 . . . Devices for lifting doors
- 25/16 . . Sealing; Means for sealing
- 25/18 . . Cooling
- 25/20 . Lids or closures for charging holes
- 25/22 . . for ovens with vertical chambers
- 25/24 . . for ovens with horizontal chambers

27/00 Arrangements for withdrawal of the distillation gases

- 27/02 . with outlets arranged at different levels in the chamber
- 27/04 . during the charging operation of the oven
- 27/06 . Conduit details, e.g. valves

29/00 Other details of coke ovens

- 29/02 . Brickwork, e.g. casings, linings, walls
- 29/04 . Controlling or preventing expansion or contraction
- 29/06 . Preventing or repairing leakages of the brickwork
- 29/08 . Bracing or foundation of the ovens

Devices for charging and discharging coke ovens; Mechanical treatments of coal charges

31/00 Charging devices

- 31/02 . for charging vertically
- 31/04 . . coke ovens with horizontal chambers
- 31/06 . for charging horizontally
- 31/08 . . coke ovens with horizontal chambers
- 31/10 . . . with one compact charge
- 31/12 . for liquid materials

33/00 Discharging devices; Coke guides

- 33/003 . {Arrangements for pollution-free discharge}
- 33/006 . {Decoking tools, e.g. hydraulic coke removing tools with boring or cutting nozzles}

33/02	• Extracting coke with built-in devices, e.g. gears, screws	47/16	• • with indirect heating means both inside and outside the retorts
33/04	• Pulling-out devices	47/18	• with moving charge
33/06	• • for horizontal chambers	47/20	• • according to the moving bed type (C10B 47/26 takes precedence)
33/08	• Pushers, e.g. rams		
33/10	• • for horizontal chambers	47/22	• • in dispersed form (C10B 47/26 takes precedence)
33/12	• Discharge valves	47/24	• • • according to the "fluidised bed" technique
33/14	• Coke guides	47/26	• • with the aid of hot liquids, e.g. molten salts
35/00	Combined charging and discharging devices	47/28	• Other processes
37/00	Mechanical treatments of coal charges in the oven	47/30	• • in rotary ovens or retorts
37/02	• Levelling charges, e.g. with bars	47/32	• • in ovens with mechanical conveying means
37/04	• Compressing charges (during coking C10B 47/12)	47/34	• • • with rotary scraping devices
37/06	• Forming holes in charges	47/36	• • • in multi-stage ovens
39/00	Cooling or quenching coke	47/38	• • • with shaking or vibrating devices
39/02	• Dry cooling outside the oven	47/40	• • • with endless conveying devices
39/04	• Wet quenching	47/42	• • • in vertical direction
39/06	• • in the oven	47/44	• • • with conveyor-screws
39/08	• • Coke-quenching towers	47/46	• • • with trucks, containers, or trays
39/10	• combined with agitating means, e.g. rotating tables or drums	47/48	• • • with tilting or rocking means
39/12	• combined with conveying means	49/00	Destructive distillation of solid carbonaceous materials by direct heating with heat-carrying agents including the partial combustion of the solid material to be treated
39/14	• Cars	49/02	• with hot gases or vapours, e.g. hot gases obtained by partial combustion of the charge
39/16	• combined with sorting	49/04	• • while moving the solid material to be treated
39/18	• Coke ramps	49/06	• • • according to the moving bed type
41/00	Safety devices, e.g. signalling or controlling devices for use in the discharge of coke	49/08	• • • in dispersed form
41/005	• {for charging coal}	49/10	• • • • according to the "fluidised bed" technique
41/02	• for discharging coke	49/12	• • • • by mixing tangentially, e.g. in vortex chambers
41/04	• • by electrical means	49/14	• with hot liquids, e.g. molten metals
41/06	• • by pneumatic or hydraulic means	49/16	• with moving solid heat-carriers in divided form
41/08	• for the withdrawal of the distillation gases	49/18	• • according to the "moving bed" type
43/00	Preventing or removing incrustations	49/20	• • in dispersed form
43/02	• Removing incrustations	49/22	• • • according to the "fluidised bed" technique
43/04	• • by mechanical means	51/00	Destructive distillation of solid carbonaceous materials by combined direct and indirect heating
43/06	• • • from conduits, valves or the like	53/00	Destructive distillation, specially adapted for particular solid raw materials or solid raw materials in special form (wet carbonising of peat C10F)
43/08	• • with liquids	53/02	• of cellulose-containing material (production of pyroligneous acid C10C 5/00)
43/10	• • by burning out	53/04	• of powdered coal
43/12	• • • Burners	53/06	• of oil shale and/or or bituminous rocks
43/14	• Preventing incrustations	53/07	• {of solid raw materials consisting} of synthetic polymeric materials, e.g. tyres ({ waste in general, e.g. household waste C10B 53/00; } recovery or working-up of waste materials of organic macromolecular compounds or compositions based thereon by dry-heat treatment for obtaining partially depolymerised materials C08J 11/10; production of liquid hydrocarbon mixtures from rubber or rubber waste C10G 1/10)
45/00	Other details		• in the form of briquettes, lumps and the like
45/005	• {Devices for recovering spilled coke, e.g. recovering the coke falling out the oven when opening doors or withdrawing the leveler bar}	55/00	Coking mineral oils, bitumen, tar, and the like or mixtures thereof with solid carbonaceous material (cracking oils C10G)
45/02	• Devices for producing compact unified coal charges outside the oven (briquetting presses B30B)	55/02	• with solid materials
		55/04	• • with moving solid materials

Carbonising or coking processes

47/00	Destructive distillation of solid carbonaceous material with indirect heating, e.g. by external combustion
47/02	• with stationary charge
47/04	• • in shaft furnaces
47/06	• • in retorts
47/08	• • in beehive ovens
47/10	• • in coke ovens of the chamber type
47/12	• • in which the charge is subjected to mechanical pressures during coking
47/14	• • with the aid of hot liquids, e.g. molten salts

- 55/06 . . . according to the "moving bed" type
- 55/08 . . . in dispersed form
- 55/10 . . . according to the "fluidised bed" technique
- 57/00 Other processes not covered before; Features of destructive distillation processes in general**
- 57/005 . {After-treatment of coke, e.g. calcination desulfurization}
- 57/02 . Multi-step carbonising or coking processes
- 57/04 . Using charges of special composition
- 57/045 . . {containing mineral oils, bitumen, tar or the like or mixtures thereof}
- 57/06 . . containing additives
- 57/08 . Non-mechanical pre-treatment of the charge ([C10L 9/00 takes precedence](#)), {e.g. desulfurization}
- 57/10 . . Drying
- 57/12 . Applying additives during coking
- 57/14 . Features of low-temperature carbonising processes
- 57/16 . Features of high-temperature carbonising processes
- 57/18 . Modifying the properties of the distillation gases in the oven ([outside the oven C10K](#))