

CPC COOPERATIVE PATENT CLASSIFICATION

F23B METHODS OR APPARATUS FOR COMBUSTION USING ONLY SOLID FUEL (for combustion of fuels that are solid at room temperatures, but burned in melted form, e.g. candle wax, [C11C 5/00](#), [F23C](#), [F23D](#); using solid fuel suspended in air [F23C](#), [F23D 1/00](#); using solid fuel suspended in liquids [F23C](#), [F23D 11/00](#); using solid fuel and fluent fuel simultaneously or alternately [F23C](#), [F23D 17/00](#); burning of low grade fuel [F23G](#); grates [F23H](#); feeding solid fuel to combustion apparatus [F23K](#); combustion chambers, not otherwise provided for [F23M](#); domestic apparatus [F24](#); central heating boilers [F24D](#); package boilers [F24H](#))

NOTE

This subclass is only concerned with the combustion of lump fuel, or of pulverulent or granulated fuel if no use is made of its fluent nature.

IPC7 groups

1/00	{Combustion apparatus using only lump fuel}	5/04	. {in separate combustion chamber; on separate grate}
1/02	. {for indirect heating of a medium in a vessel, e.g. for boiling water (steam generation F22)}	7/00	{Combustion techniques; Other solid-fuel combustion apparatus}
1/04	. . {External furnaces, i.e. with furnace in front of the vessel}	7/002	. {characterised by gas flow arrangements}
1/06	. . . {for heating water-tube boilers, e.g. Tenbrink flue furnaces}	7/005	. . {with draught through fuel bed and grate}
1/08	. . {Internal furnaces, i.e. with furnaces inside the vessel}	7/007	. . {with fluegas recirculation to combustion chamber}
1/10	. . . {for heating locomotive boilers}		
1/12	. . {with a plurality of combustion chambers}	10/00	Combustion apparatus characterised by the combination of two or more combustion chambers
1/16	. {the combustion apparatus being modified according to the form of grate or other fuel support (for incinerators F23G 5/002)}	10/02	. including separate secondary combustion chambers
1/165	. . {using roller grate}	20/00	Combustion apparatus specially adapted for portability or transportability
1/18	. . {using inclined grate}	30/00	Combustion apparatus with driven means for agitating the burning fuel; Combustion apparatus with driven means for advancing the burning fuel through the combustion chamber
1/20	. . {using step-type grate}		
1/22	. . {using travelling grate}	30/02	. with movable, e.g. vibratable, fuel-supporting surfaces; with fuel-supporting surfaces that have movable parts
1/24	. . {using rotating grate}	30/04	. . with fuel-supporting surfaces that are rotatable around a horizontal or inclined axis and support the fuel on their inside, e.g. cylindrical grates
1/26	. . {using imperforate fuel supports}	30/06	. . with fuel supporting surfaces that are specially adapted for advancing fuel through the combustion zone
1/28	. . {using ridge-type grate, e.g. for combustion of peat, sawdust, or pulverulent fuel (combustion of peat, sawdust F23G 7/10)}	30/08	. . . with fuel-supporting surfaces that move through the combustion zone, e.g. with chain grates
1/30	. {characterised by the form of combustion chamber}	30/10	. . . with fuel-supporting surfaces having fuel advancing elements that are movable, but remain essentially in the same place, e.g. with rollers or reciprocating grate bars
1/32	. . {rotating}	40/00	Combustion apparatus with driven means for feeding fuel into the combustion chamber
1/34	. . {annular}	40/02	. the fuel being fed by scattering over the fuel-supporting surface
1/36	. . {shaft-type}	40/04	. the fuel being fed from below through an opening in the fuel-supporting surface
1/38	. . {for combustion of peat, sawdust, or pulverulent fuel on a grate or other fuel support (combustion of peat, sawdust F23G 7/10)}	40/06	. the fuel being fed along the fuel-supporting surface
3/00	{Combustion apparatus which is portable or removable with respect to the boiler or other apparatus which is heated}	40/08	. . into pot- or through-shaped grates
5/00	{Combustion apparatus with arrangements for burning uncombusted material from primary combustion (combustion apparatus characterised by the combination of two or more combustion chambers F23C 6/00; the primary combustion being pulverulent fuel F23C 9/003)}		
5/02	. {in main combustion chamber}		
5/025	. . {recirculating uncombusted solids to combustion chamber}		

50/00	Combustion apparatus in which the fuel is fed into or through the combustion zone by gravity, e.g. from a fuel storage situated above the combustion zone	2700/004	. adapted for use in Tenbrink boilers
50/02	. the fuel forming a column, stack or thick layer with the combustion zone at its bottom	2700/005	. adapted for use in locomotives
50/04	. . the movement of combustion air and flue gases being substantially transverse to the movement of the fuel	2700/006	. Details of locomotive combustion apparatus
50/06	. . the fuel gases being removed downwards through one or more openings in the fuel-supporting surface	2700/007	. with pressurised combustion chambers
50/08	. . with fuel-deflecting bodies forming free combustion spaces inside the fuel layer	2700/008	. with interchangeable combustion chambers
50/10	. . with the combustion zone at the bottom of fuel-filled conduits ending at the surface of a fuel bed	2700/009	. adapted for use in various steam boilers
50/12	. the fuel being fed to the combustion zone by free fall or by sliding along inclined surfaces, e.g. from a conveyor terminating above the fuel bed	2700/01	. adapted for boilers built up from sections
		2700/011	. with fuel shaft for steam boilers
		2700/012	. with predrying in fuel supply area
		2700/013	. for use in baking ovens or cooking vessels
		2700/014	. for use in reverberatory furnaces
		2700/018	. with fume afterburning by staged combustion
		2700/022	. with various types of fume afterburners
		2700/023	. with various arrangements not otherwise provided for
		2700/037	. Burners for solid or solidified fuel, e.g. metaldehyde blocks
60/00	Combustion apparatus in which the fuel burns essentially without moving		
60/02	. with combustion air supplied through a grate		
70/00	Combustion apparatus characterised by means returning solid combustion residues to the combustion chamber	2900/00	Special features of, or arrangements for combustion apparatus using solid fuels; Combustion processes therefor
80/00	Combustion apparatus characterised by means creating a distinct flow path for flue gases or for non-combusted gases given off by the fuel	2900/00001	. Combustion chambers with integrated fuel hopper
80/02	. by means for returning flue gases to the combustion chamber or to the combustion zone	2900/00003	. Combustion devices specially adapted for burning metal fuels, e.g. Al or Mg
80/04	. by means for guiding the flow of flue gases, e.g. baffles	2900/00004	. Means for generating pulsating combustion of solid fuel
90/00	Combustion methods not related to a particular type of apparatus	2900/00005	. Means for applying acoustical energy to flame
	NOTE	2900/00006	. Means for applying electricity to flame, e.g. an electric field
	Groups F23B 90/00 - F23B 90/08 correspond to IPC2012.01	2900/99001	. Retrofitting or converting solid fuel stoves to gas or liquid fuels
90/02	. Start-up techniques		
90/04	. including secondary combustion (in separate combustion chambers F23B 10/02)		
90/06	. . the primary combustion being a gasification or pyrolysis in a reductive atmosphere		
90/08	. . in the presence of catalytic material		
99/00	Subject matter not provided for in other groups of this subclass		
2101/00	Adaptation of combustion apparatus to boilers in which the combustion chamber is situated inside the boiler vessel, e.g. surrounded by cooled surfaces		

Indexing scheme related to adaptation of combustion apparatus to boilers

2103/00	Adaptation of combustion apparatus for placement in or against an opening of a boiler, e.g. for replacing an oil burner
2103/02	. for producing an essentially horizontal flame
2700/00	Combustion apparatus for solid fuel
2700/003	. adapted for use in water-tube boilers