

CPC COOPERATIVE PATENT CLASSIFICATION

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

LIGHTING; HEATING

F23 COMBUSTION APPARATUS; COMBUSTION PROCESSES (NOTE omitted)

F23R GENERATING COMBUSTION PRODUCTS OF HIGH PRESSURE OR HIGH VELOCITY, e.g. GAS-TURBINE COMBUSTION CHAMBERS (fluidised bed combustion apparatus specially adapted for operation at superatmospheric pressures [F23C 10/16](#))

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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| 3/00 | Continuous combustion chambers using liquid or gaseous fuel | 3/343 | . . . {Pilot flames, i.e. fuel nozzles or injectors using only a very small proportion of the total fuel to insure continuous combustion (ignition in gas-turbine plants F02C 7/264 ; pilot flame igniters F23Q 9/00)} |
| 3/002 | . {Wall structures (F23R 3/02 and F23R 3/007 take precedence)} | | |
| 3/005 | . {Combined with pressure or heat exchangers} | | |
| 3/007 | . {constructed mainly of ceramic components} | 3/346 | . . . {for staged combustion} |
| 3/02 | . characterised by the air-flow or gas-flow configuration (reverse-flow combustion chambers F23R 3/54 ; cyclone or vortex type combustion chambers F23R 3/58) | 3/36 | . . Supply of different fuels |
| | | 3/38 | . . comprising rotary fuel injection means |
| 3/04 | . . Air inlet arrangements | 3/40 | . characterised by the use of catalytic means |
| 3/045 | . . . {using pipes} | 3/42 | . characterised by the arrangement or form of the flame tubes or combustion chambers |
| 3/06 | . . . Arrangement of apertures along the flame tube | 3/425 | . . {Combustion chambers comprising a tangential or helicoidal arrangement of the flame tubes} |
| 3/08 | between annular flame tube sections, e.g. flame tubes with telescopic sections | 3/44 | . . Combustion chambers comprising a {single} tubular flame tube within a tubular casing (reverse-flow combustion chambers F23R 3/54) |
| 3/10 | . . . for primary air (F23R 3/06 , F23R 3/045 take precedence) | 3/46 | . . Combustion chambers comprising an annular arrangement of {several essentially tubular} flame tubes within a common annular casing or within individual casings |
| 3/12 | inducing a vortex | | |
| 3/14 | by using swirl vanes | 3/48 | . . . Flame tube interconnectors, e.g. cross-over tubes |
| 3/16 | . . with devices inside the flame tube or the combustion chamber to influence the air or gas flow | 3/50 | . . Combustion chambers comprising an annular flame tube within an annular casing (toroidal combustion chambers F23R 3/52) |
| 3/18 | . . . Flame stabilising means, e.g. flame holders for after-burners of jet-propulsion plants | 3/52 | . . Toroidal combustion chambers |
| 3/20 | incorporating fuel injection means | 3/54 | . . Reverse-flow combustion chambers |
| 3/22 | movable, e.g. to an inoperative position; adjustable, e.g. self-adjusting | 3/56 | . . Combustion chambers having rotary flame tubes |
| 3/24 | of the fluid-screen type | 3/58 | . . Cyclone or vortex type combustion chambers |
| 3/26 | . . Controlling the air flow | 3/60 | . . Support structures; Attaching or mounting means |
| 3/28 | . characterised by the fuel supply (burners F23D) | | |
| 3/283 | . . {Attaching or cooling of fuel injecting means including supports for fuel injectors, stems, or lances} | 5/00 | Continuous combustion chambers using solid or pulverulent fuel |
| 3/286 | . . {having fuel-air premixing devices (F23R 3/30 takes precedence)} | 7/00 | Intermittent or explosive combustion chambers |
| 3/30 | . . comprising fuel prevapourising devices | 2900/00 | Special features of, or arrangements for continuous combustion chambers; Combustion processes therefor |
| 3/32 | . . . being tubular | 2900/00001 | . Arrangements using bellows, e.g. to adjust volumes or reduce thermal stresses |
| 3/34 | . . Feeding into different combustion zones | 2900/00002 | . Gas turbine combustors adapted for fuels having low heating value [LHV] |

F23R

- 2900/00004 . Preventing formation of deposits on surfaces of gas turbine components, e.g. coke deposits
- 2900/00005 . Preventing fatigue failures or reducing mechanical stress in gas turbine components
- 2900/00006 . Using laser for starting or improving the combustion process
- 2900/00008 . Combustion techniques using plasma gas ([plasma torches F23R 2900/00009](#))
- 2900/00009 . Using plasma torches for igniting, stabilizing, or improving the combustion process
- 2900/00012 . Details of sealing devices
- 2900/00013 . Reducing thermo-acoustic vibrations by active means
- 2900/00014 . Reducing thermo-acoustic vibrations by passive means, e.g. by Helmholtz resonators ([silence apparatus using resonance F01N 1/023](#))
- 2900/00015 . Trapped vortex combustion chambers
- 2900/00016 . Retrofitting in general, e.g. to respect new regulations on pollution
- 2900/00017 . Assembling combustion chamber liners or subparts
- 2900/00018 . Manufacturing combustion chamber liners or subparts
- 2900/00019 . Repairing or maintaining combustion chamber liners or subparts
- 2900/03041 . Effusion cooled combustion chamber walls or domes
- 2900/03042 . Film cooled combustion chamber walls or domes
- 2900/03043 . Convection cooled combustion chamber walls with means for guiding the cooling air flow ([means for creating turbulence F23R 2900/03045](#))
- 2900/03044 . Impingement cooled combustion chamber walls or subassemblies
- 2900/03045 . Convection cooled combustion chamber walls provided with turbulators or means for creating turbulences to increase cooling
- 2900/03281 . Intermittent fuel injection or supply with plunger pump or other means therefor
- 2900/03282 . High speed injection of air and/or fuel inducing internal recirculation
- 2900/03341 . Sequential combustion chambers or burners
- 2900/03342 . Arrangement of silo-type combustion chambers
- 2900/03343 . Pilot burners operating in premixed mode