

# 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.

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

- 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
- 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
- 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
- 2900/03044 . Impingement cooled combustion chamber walls or subassemblies
- 2900/03045 . Convection cooled combustion chamber walls provided with turbolators 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