

## SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING

### F23 COMBUSTION APPARATUS; COMBUSTION PROCESSES

#### F23C METHODS OR APPARATUS FOR COMBUSTION USING FLUID FUEL OR SOLID FUEL SUSPENDED IN AIR (burners F23D)

##### Note(s) [2006.01]

In this subclass, methods are classified in the groups that cover the apparatus used.

##### Subclass index

##### COMBUSTION APPARATUS SPECIALLY ADAPTED FOR COMBUSTION OF TWO OR MORE

TYPES OF FUEL.....1/00

COMBINATIONS OF TWO OR MORE COMBUSTION CHAMBERS.....6/00

##### FUNCTIONAL TYPES OF COMBUSTION APPARATUS

Fluidised bed combustion.....10/00

Catalytic combustion.....13/00

Resonant combustion.....15/00

##### COMBUSTION APPARATUS CHARACTERISED BY SUBSYSTEMS

Combustion chambers.....3/00

Arrangement or mounting of burners.....5/00

Air supply.....7/00

Arrangements for returning flue gases or combustion products.....9/00

SUBJECT MATTER NOT PROVIDED FOR IN OTHER GROUPS OF THIS SUBCLASS.....99/00

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| <p><b>1/00</b>    <b>Combustion apparatus specially adapted for combustion of two or more kinds of fuel simultaneously or alternately, at least one kind of fuel being either a fluid fuel or a solid fuel suspended in air</b> (combustion apparatus characterised by the combination of two or more combustion chambers F23C 6/00; pilot flame igniters F23Q 9/00) [1, 7, 2006.01]</p> <p>1/02    • lump and liquid fuel [1, 2006.01]</p> <p>1/04    • lump and gaseous fuel [1, 2006.01]</p> <p>1/06    • lump and pulverulent fuel [1, 2006.01]</p> <p>1/08    • liquid and gaseous fuel [1, 2006.01]</p> <p>1/10    • liquid and pulverulent fuel [1, 2006.01]</p> <p>1/12    • gaseous and pulverulent fuel [1, 2006.01]</p> <p><b>3/00</b>    <b>Combustion apparatus characterised by the shape of the combustion chamber</b> (F23C 15/00 takes precedence) [1, 7, 2006.01]</p> <p><b>5/00</b>    <b>Combustion apparatus characterised by the arrangement or mounting of burners</b> [1, 7, 2006.01]</p> <p>5/02    • Structural details of mounting [1, 2006.01]</p> <p>5/06    • • Provision for adjustment of burner position during operation [1, 2006.01]</p> <p>5/08    • Disposition of burners [1, 2006.01]</p> <p>5/14    • • to obtain a single flame of concentrated or substantially planar form, e.g. pencil or sheet flame (F23C 5/32 takes precedence) [1, 3, 2006.01]</p> <p>5/24    • • to obtain a loop flame [1, 2006.01]</p> | <p>5/28    • • to obtain flames in opposing directions, e.g. impacting flames [1, 2006.01]</p> <p>5/32    • • to obtain rotating flames, i.e. flames moving helically or spirally [3, 2006.01]</p> <p><b>6/00</b>    <b>Combustion apparatus characterised by the combination of two or more combustion chambers</b> [3, 7, 2006.01]</p> <p>6/02    • in parallel arrangement [3, 2006.01]</p> <p>6/04    • in series connection [3, 2006.01]</p> <p><b>7/00</b>    <b>Combustion apparatus characterised by arrangements for air supply</b> (inlets for fluidisation air F23C 10/20; baffles or shields with air supply passages F23M 9/04) [1, 7, 2006.01]</p> <p>7/02    • Disposition of air supply not passing through burner [1, 2006.01]</p> <p>7/04    • • to obtain maximum heat transfer to wall of combustion chamber [1, 2006.01]</p> <p>7/06    • • for heating the incoming air (arrangements of regenerators or recuperators F23L 15/00) [1, 2006.01]</p> <p>7/08    • • • indirectly by a secondary fluid other than the combustion products [1, 2006.01]</p> |
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- 9/00** **Combustion apparatus characterised by arrangements for returning combustion products or flue gases to the combustion chamber** (fluidised bed combustion apparatus with means for recirculation of particles entrained from the bed F23C 10/02; fluidised bed combustion apparatus with devices for removal and partial reintroduction of material from the bed F23C 10/26) [1, 7, 2006.01]
- 9/06 • for completing combustion [3, 2006.01]
- 9/08 • for reducing temperature in combustion chamber, e.g. for protecting walls of combustion chamber [3, 2006.01]
- 10/00** **Apparatus in which combustion takes place in a fluidised bed of fuel or other particles** [7, 2006.01]
- Note(s)** [7]
- In this group, it is desirable to add the indexing code of group F23C 101/00.
- 10/01 • in a fluidised bed of catalytic particles [2006.01]
- 10/02 • with means specially adapted for achieving or promoting a circulating movement of particles within the bed or for a recirculation of particles entrained from the bed [7, 2006.01]
- 10/04 • • the particles being circulated to a section, e.g. a heat-exchange section or a return duct, at least partially shielded from the combustion zone, before being reintroduced into the combustion zone [7, 2006.01]
- 10/06 • • • the circulating movement being promoted by inducing differing degrees of fluidisation in different parts of the bed [7, 2006.01]
- 10/08 • • • characterised by the arrangement of separation apparatus, e.g. cyclones, for separating particles from the flue gases [7, 2006.01]
- 10/10 • • • the separation apparatus being located outside the combustion chamber [7, 2006.01]
- 10/12 • • the particles being circulated exclusively within the combustion zone [7, 2006.01]
- 10/14 • • • the circulating movement being promoted by inducing differing degrees of fluidisation in different parts of the bed [7, 2006.01]
- 10/16 • specially adapted for operation at superatmospheric pressures, e.g. by the arrangement of the combustion chamber and its auxiliary systems inside a pressure vessel [7, 2006.01]
- 10/18 • Details; Accessories [7, 2006.01]
- 10/20 • • Inlets for fluidisation air, e.g. grids; Bottoms [7, 2006.01]
- 10/22 • • Fuel feeders specially adapted for fluidised bed combustion apparatus (F23C 10/26 takes precedence) [7, 2006.01]
- 10/24 • • Devices for removal of material from the bed (devices for controlling the level of the bed or the amount of material in the bed F23C 10/30) [7, 2006.01]
- 10/26 • • • combined with devices for partial reintroduction of material into the bed, e.g. after separation of agglomerated parts [7, 2006.01]
- 10/28 • • Control devices specially adapted for fluidised bed combustion apparatus [7, 2006.01]
- 10/30 • • • for controlling the level of the bed or the amount of material in the bed [7, 2006.01]
- 10/32 • • • by controlling the rate of recirculation of particles separated from the flue gases [7, 2006.01]
- 13/00** **Apparatus in which combustion takes place in the presence of catalytic material** (in a fluidised bed of catalytic particles F23C 10/01; radiant gas burners using catalysis for flameless combustion F23D 14/18) [2006.01]
- 13/02 • characterised by arrangements for starting the operation, e.g. for heating the catalytic material to operating temperature [2006.01]
- 13/04 • characterised by the arrangement of two or more catalytic elements in series connection [2006.01]
- 13/06 • in which non-catalytic combustion takes place in addition to catalytic combustion, e.g. downstream of a catalytic element [2006.01]
- 13/08 • characterised by the catalytic material [2006.01]
- 15/00** **Apparatus in which combustion takes place in pulses influenced by acoustic resonance in a gas mass** [2006.01]
- 99/00** **Subject matter not provided for in other groups of this subclass** [2006.01]
- Indexing scheme associated with group F23C 10/00, relating to combustion in entrained fluidised beds. [7]**
- 101/00** **Combustion in entrained fluidised beds, i.e. fluidised beds which have no distinct upper surface** [7, 2006.01]