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

F01 MACHINES OR ENGINES IN GENERAL; ENGINE PLANTS IN GENERAL; STEAM ENGINES

F01N GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR MACHINES OR ENGINES IN GENERAL; GAS-FLOW SILENCERS OR EXHAUST APPARATUS FOR INTERNAL-COMBUSTION ENGINES (arrangements in connection with gas exhaust of propulsion units in vehicles B60K 13/00; combustion-air intake silencers specially adapted for, or arranged on, internal-combustion engines F02M 35/00; protecting against, or damping, noise in general G10K 11/16)

Note(s)

Attention is drawn to the Notes preceding class F01, especially as regards Note (3).

1/00 Silencing apparatus characterised by method of silencing [1, 2006.01]

1/02 • by using resonance **[1, 2006.01]**

1/04 • • having sound-absorbing materials in resonance chambers **[1, 2006.01]**

1/06 • by using interference effect **[1, 2006.01]**

1/08 • by reducing exhaust energy by throttling or whirling **[1, 2006.01]**

1/10 • • in combination with sound-absorbing materials **[1, 2006.01]**

1/12 • • using spirally- or helically-shaped channels (F01N 1/10 takes precedence; cyclones B04C) **[1, 2006.01]**

1/14 • by adding air to exhaust gases **[1, 2006.01]**

1/16 • by using movable parts **[1, 2006.01]**

1/18 • • having rotary movement **[1, 2006.01]**

1/20 • • having oscillating or vibrating movement (the parts being resilient walls F01N 1/22) **[1, 2006.01]**

1/22 • • the parts being resilient walls **[1, 2006.01]**

1/24 • by using sound-absorbing materials (F01N 1/04, F01N 1/06, F01N 1/10, F01N 1/14, F01N 1/16 take precedence) **[1, 2006.01]**

3/00 Exhaust or silencing apparatus having means for purifying, rendering innocuous, or otherwise treating exhaust (electric control F01N 9/00; monitoring or diagnostic devices for exhaust-gas treatment apparatus F01N 11/00) **[1, 4, 2006.01]**

3/01 • by means of electric or electrostatic separators **[7, 2006.01]**

3/02 • for cooling, or for removing solid constituents of, exhaust (by means of electric or electrostatic separators F01N 3/01) **[1, 7, 2006.01]**

3/021 • • by means of filters **[7, 2006.01]**

3/022 • • • characterised by specially adapted filtering structure, e.g. honeycomb, mesh or fibrous **[7, 2006.01]**

3/023 • • • using means for regenerating the filters, e.g. by burning trapped particles **[7, 2006.01]**

3/025 • • • • using fuel burner or by adding fuel to exhaust **[7, 2006.01]**

3/027 • • • • using electric or magnetic heating **[7, 2006.01]**

3/028 • • • • • using microwaves **[7, 2006.01]**

3/029 • • • • by adding non-fuel substances to exhaust **[7, 2006.01]**

3/031 • • • having means for by-passing filters, e.g. when clogged or during cold engine start **[7, 2006.01]**

3/032 • • • • during filter regeneration only **[7, 2006.01]**

3/033 • • • in combination with other devices **[7, 2006.01]**

3/035 • • • • with catalytic reactors **[7, 2006.01]**

3/037 • • by means of inertial or centrifugal separators, e.g. associated with agglomerators **[7, 2006.01]**

3/038 • • by means of perforated plates defining expansion chambers associated with condensation and collection chambers **[7, 2006.01]**

3/04 • • by means of liquids **[1, 2006.01]**

3/05 • • by means of air, e.g. by mixing exhaust with air (silencers working by addition of air to exhaust F01N 1/14; arrangements for the supply of additional air for the thermal or catalytic conversion of noxious components of exhaust F01N 3/30) **[7, 2006.01]**

3/06 • for extinguishing sparks **[1, 2006.01]**

3/08 • for rendering innocuous (using electric or electrostatic separators F01N 3/01; chemical aspects B01D 53/92) **[1, 7, 2006.01]**

3/10 • • by thermal or catalytic conversion of noxious components of exhaust **[1, 3, 2006.01]**

3/18 • • • characterised by methods of operation; Regulation **[3, 2006.01]**

3/20 • • • • specially adapted for catalytic conversion (F01N 3/22 takes precedence) **[3, 2006.01]**

3/22 • • • • Regulation of additional air supply only, e.g. using by-passes or variable air pump drives **[3, 2006.01]**

3/24 • • • characterised by constructional aspects of converting apparatus (filtering in combination with catalytic reactors F01N 3/035) **[3, 7, 2006.01]**

3/26 • • • • Construction of thermal reactors **[3, 2006.01]**

3/28 • • • • Construction of catalytic reactors **[3, 2006.01]**

3/30 • • • • Arrangements for supply of additional air (regulation, e.g. using by-passes or variable air pump drives, F01N 3/22) **[3, 2006.01]**

3/32 • • • • • using air pumps (using jet air pumps F01N 3/34; pumps in general F04) **[3, 2006.01]**

3/34 • • • • • using air conduits or jet air pumps, e.g. near the engine exhaust port **[3, 2006.01]**

3/36 • • • • Arrangements for supply of additional fuel **[3, 2006.01]**

3/38 • • • • Arrangements for igniting **[3, 2006.01]**

5/00 Exhaust or silencing apparatus combined or associated with devices profiting by exhaust energy (using kinetic or wave energy of exhaust gases in exhaust systems for charging F02B; predominant aspects of such devices, see the relevant classes for the devices) **[1, 2006.01]**

5/02 • the devices using heat **[1, 2006.01]**

5/04 • the devices using kinetic energy **[1, 2006.01]**

9/00 Electrical control of exhaust gas treating apparatus (monitoring or diagnostic devices for exhaust-gas treatment apparatus F01N 11/00; conjoint electrical control of two or more combustion engine functions F02D 43/00) **[4, 2006.01]**

11/00 Monitoring or diagnostic devices for exhaust-gas treatment apparatus [7, 2006.01]

13/00 Exhaust or silencing apparatus characterised by constructional features [2010.01]

13/02 • having two or more separate silencers in series **[2010.01]**

13/04 • having two or more silencers in parallel, e.g. having interconnections for multi-cylinder engines **[2010.01]**

13/06 • specially adapted for star-arrangement of cylinders, e.g. exhaust manifolds **[2010.01]**

13/08 • Other arrangements or adaptations of exhaust conduits **[2010.01]**

13/10 • • of exhaust manifolds **[2010.01]**

13/12 • specially adapted for submerged exhausting **[2010.01]**

13/14 • having thermal insulation **[2010.01]**

13/16 • Selection of particular materials **[2010.01]**

13/18 • Construction facilitating manufacture, assembly or disassembly **[2010.01]**

13/20 • having flared outlets, e.g. of fish-tail shape **[2010.01]**

99/00 Subject matter not provided for in other groups of this subclass [2010.01]