

| Symbol           | Typ                 | Titel                                                                                                                                                                                                                                                      |
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| <b>F</b>         | <b>Sektion</b>      | <b>SECTION F — MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING</b>                                                                                                                                                                            |
| <b>F02</b>       | <b>Klasse</b>       | <b>COMBUSTION ENGINES (cyclically operating valves therefor, lubricating, exhausting, or silencing engines F01); HOT-GAS OR COMBUSTION-PRODUCT ENGINE PLANTS</b>                                                                                           |
| <b>F02M</b>      | <b>Unterklasse</b>  | <b>SUPPLYING COMBUSTION ENGINES IN GENERAL WITH COMBUSTIBLE MIXTURES OR CONSTITUENTS THEREOF (charging such engines F02B)</b><br><b><u>Carburettors (for gaseous fuels F02M 21/00; combined with low-pressure fuel-injection apparatus F02M 71/00)</u></b> |
| <b>F02M 1/00</b> | <b>Hauptgruppe</b>  | <b>Carburettors with means for facilitating engine's starting or its idling below operational temperatures</b>                                                                                                                                             |
| F02M 1/02        | 1-Punkt Untergruppe | . the means to facilitate starting or idling being chokes for enriching fuel-air mixture (automatic chokes F02M 1/08)                                                                                                                                      |
| F02M 1/04        | 1-Punkt Untergruppe | . the means to facilitate starting or idling being auxiliary carburetting apparatus able to be put into, and out of, operation, e.g. having automatically-operated disc valves                                                                             |
| F02M 1/06        | 2-Punkt Untergruppe | . . having axially-movable valves, e.g. piston-shaped                                                                                                                                                                                                      |
| F02M 1/08        | 1-Punkt Untergruppe | . the means to facilitate starting or idling becoming operative or inoperative automatically (in connection with auxiliary carburetting apparatus F02M 1/04)                                                                                               |
| F02M 1/10        | 2-Punkt Untergruppe | . . dependent on engine temperature, e.g. having thermostat                                                                                                                                                                                                |
| F02M 1/12        | 3-Punkt Untergruppe | . . . with means for electrically heating thermostat                                                                                                                                                                                                       |
| F02M 1/14        | 2-Punkt Untergruppe | . . dependent on pressure in combustion-air- or fuel-air-mixture intake (F02M 1/10 takes precedence)                                                                                                                                                       |
| F02M 1/16        | 1-Punkt Untergruppe | . Other means for enriching fuel-air mixture during starting; Priming cups; using different fuels for starting and normal operation                                                                                                                        |
| F02M 1/18        | 2-Punkt Untergruppe | . . Enriching fuel-air mixture by depressing float to flood carburettor                                                                                                                                                                                    |
| <b>F02M 3/00</b> | <b>Hauptgruppe</b>  | <b>Idling devices (with means for facilitating idling below operational temperatures F02M 1/00)</b>                                                                                                                                                        |
| F02M 3/02        | 1-Punkt Untergruppe | . Preventing flow of idling fuel                                                                                                                                                                                                                           |
| F02M 3/04        | 2-Punkt Untergruppe | . . under conditions where engine is driven instead of driving, e.g. driven by vehicle running down hill                                                                                                                                                   |
| F02M 3/045       | 3-Punkt Untergruppe | . . . Control of valves situated in the idling nozzle system, or the passage system, by electrical means or by a combination of electrical means with fluidic or mechanical means [4]                                                                      |
| F02M 3/05        | 3-Punkt Untergruppe | . . . Pneumatic or mechanical control, e.g. with speed regulation [4]                                                                                                                                                                                      |
| F02M 3/055       | 3-Punkt Untergruppe | . . . Fuel flow cut-off by introducing air, e.g. brake air, into the idling fuel system [4]                                                                                                                                                                |
| F02M 3/06        | 1-Punkt Untergruppe | . Increasing idling speed                                                                                                                                                                                                                                  |
| F02M 3/07        | 2-Punkt Untergruppe | . . by positioning the throttle flap stop, or by changing the fuel flow cross-sectional area, by electrical, electromechanical or electropneumatical means, according to engine speed [4]                                                                  |
| F02M 3/08        | 1-Punkt Untergruppe | . Other details of idling devices (fighting ice-formation by heating idling ports F02M 15/02)                                                                                                                                                              |
| F02M 3/09        | 2-Punkt Untergruppe | . . Valves responsive to engine conditions, e.g. manifold vacuum (F02M 1/00, F02M 5/00-F02M 33/00 take precedence) [5]                                                                                                                                     |
| F02M 3/10        | 2-Punkt Untergruppe | . . Fuel metering pins; Nozzles [4]                                                                                                                                                                                                                        |
| F02M 3/12        | 2-Punkt Untergruppe | . . Passage way systems [4]                                                                                                                                                                                                                                |

| Symbol           | Typ                 | Titel                                                                                                                                                                           |
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| F02M 3/14        | 2-Punkt Untergruppe | . . Location of idling system outlet relative to throttle valve [4]                                                                                                             |
| <b>F02M 5/00</b> | <b>Hauptgruppe</b>  | <b>Float-controlled apparatus for maintaining a constant fuel level</b>                                                                                                         |
| F02M 5/02        | 1-Punkt Untergruppe | . with provisions to meet variations in carburettor position, e.g. upside-down position in aircraft                                                                             |
| F02M 5/04        | 2-Punkt Untergruppe | . . with pivotally or rotatably mounted float chambers [4]                                                                                                                      |
| F02M 5/06        | 1-Punkt Untergruppe | . having adjustable float mechanism, e.g. to meet dissimilarities in specific gravity of different fuels                                                                        |
| F02M 5/08        | 1-Punkt Untergruppe | . having means for venting float chambers                                                                                                                                       |
| F02M 5/10        | 1-Punkt Untergruppe | . having means for preventing vapour lock, e.g. insulated float chambers or forced fuel circulation through float chamber with engine stopped                                   |
| F02M 5/12        | 1-Punkt Untergruppe | . Other details, e.g. floats, valves, setting devices or tools (floats in general F16K 33/00)                                                                                   |
| F02M 5/16        | 2-Punkt Untergruppe | . . Floats [4]                                                                                                                                                                  |
| <b>F02M 7/00</b> | <b>Hauptgruppe</b>  | <b>Carburettors with means for influencing, e.g. enriching or keeping constant, fuel/air ratio of charge under varying conditions (choke valves for starting F02M 1/00)</b>     |
| F02M 7/02        | 1-Punkt Untergruppe | . Carburettors having aerated fuel spray nozzles (with valve control for amount of air for aerating fuel F02M 7/24)                                                             |
| F02M 7/04        | 1-Punkt Untergruppe | . Means for enriching charge at high combustion-air flow                                                                                                                        |
| F02M 7/06        | 1-Punkt Untergruppe | . Means for enriching charge on sudden throttle opening, i.e. at acceleration, e.g. storage means in passage way system                                                         |
| F02M 7/08        | 2-Punkt Untergruppe | . . using pumps                                                                                                                                                                 |
| F02M 7/087       | 3-Punkt Untergruppe | . . . changing output according to temperature in engine [4]                                                                                                                    |
| F02M 7/093       | 3-Punkt Untergruppe | . . . changing output according to intake vacuum [4]                                                                                                                            |
| F02M 7/10        | 1-Punkt Untergruppe | . Other installations, without moving parts, for influencing fuel/air ratio, e.g. electrical means (F02M 7/23 takes precedence) [4]                                             |
| F02M 7/11        | 2-Punkt Untergruppe | . . Altering float-chamber pressure (enriching the fuel-air mixture during starting by depressing float to flood carburettor F02M 1/18) [5]                                     |
| F02M 7/12        | 1-Punkt Untergruppe | . Other installations, with moving parts, for influencing fuel/air ratio, e.g. having valves (F02M 7/24 takes precedence) [4]                                                   |
| F02M 7/127       | 2-Punkt Untergruppe | . . Altering the float-chamber pressure (enriching the fuel-air mixture during starting by depressing float to flood carburettor F02M 1/18) [5]                                 |
| F02M 7/133       | 2-Punkt Untergruppe | . . Auxiliary jets, i.e. operating only under certain conditions, e.g. full power (F02M 7/04, F02M 7/06 take precedence) [5]                                                    |
| F02M 7/14        | 2-Punkt Untergruppe | . . with means for controlling cross-sectional area of fuel spray nozzle (dependent on air-throttle valve position F02M 7/22)                                                   |
| F02M 7/16        | 3-Punkt Untergruppe | . . . operated automatically, e.g. dependent on exhaust-gas analysis                                                                                                            |
| F02M 7/17        | 4-Punkt Untergruppe | . . . . by a pneumatically adjustable piston-like element, e.g. constant depression carburettors [5]                                                                            |
| F02M 7/18        | 2-Punkt Untergruppe | . . with means for controlling cross-sectional area of fuel-metering orifice (dependent on air-throttle position F02M 7/22)                                                     |
| F02M 7/20        | 3-Punkt Untergruppe | . . . operated automatically, e.g. dependent on altitude                                                                                                                        |
| F02M 7/22        | 2-Punkt Untergruppe | . . fuel flow cross-sectional area being controlled dependent on air-throttle-valve position (the throttle valve being slidably arranged transversely to air passage F02M 9/06) |

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| F02M 7/23         | 1-Punkt Untergruppe | . Fuel aerating devices [4]                                                                                                                                                                                                                                                                                             |
| F02M 7/24         | 2-Punkt Untergruppe | . . Controlling flow of aerating air [4]                                                                                                                                                                                                                                                                                |
| F02M 7/26         | 3-Punkt Untergruppe | . . . dependent on position of optionally operable throttle means [4]                                                                                                                                                                                                                                                   |
| F02M 7/28         | 3-Punkt Untergruppe | . . . dependent on temperature or pressure [4]                                                                                                                                                                                                                                                                          |
| <b>F02M 9/00</b>  | <b>Hauptgruppe</b>  | <b>Carburettors having air or fuel-air mixture passage throttling valves other than of butterfly type (register-type carburettors F02M 11/00); Carburettors having fuel-air mixing chambers of variable shape or position</b>                                                                                           |
| F02M 9/02         | 1-Punkt Untergruppe | . having throttling valves, e.g. of piston shape, slidably arranged transversely to the passage                                                                                                                                                                                                                         |
| F02M 9/04         | 2-Punkt Untergruppe | . . with throttling valves sliding in a plane inclined to the passage                                                                                                                                                                                                                                                   |
| F02M 9/06         | 2-Punkt Untergruppe | . . with means for varying cross-sectional area of fuel spray nozzle dependent on throttle position (F02M 7/17 takes precedence) [5]                                                                                                                                                                                    |
| F02M 9/08         | 1-Punkt Untergruppe | . having throttling valves rotatably mounted in the passage                                                                                                                                                                                                                                                             |
| F02M 9/10         | 1-Punkt Untergruppe | . having valves, or like controls, of elastic-wall type for controlling the passage, or for varying cross-sectional area, of fuel-air mixing chambers                                                                                                                                                                   |
| F02M 9/12         | 1-Punkt Untergruppe | . having other specific means for controlling the passage, or for varying cross-sectional area, of fuel-air mixing chambers                                                                                                                                                                                             |
| F02M 9/127        | 2-Punkt Untergruppe | . . Axially movable throttle valves concentric with the axis of the mixture passage [5]                                                                                                                                                                                                                                 |
| F02M 9/133        | 3-Punkt Untergruppe | . . . the throttle valves having mushroom-shaped bodies [5]                                                                                                                                                                                                                                                             |
| F02M 9/14         | 1-Punkt Untergruppe | . having venturi and nozzle relatively displaceable essentially along the venturi axis                                                                                                                                                                                                                                  |
| <b>F02M 11/00</b> | <b>Hauptgruppe</b>  | <b>Multi-stage carburettors; Register-type carburettors, i.e. with slidable or rotatable throttling valves in which a plurality of fuel nozzles, other than only an idling nozzle and a main one, are sequentially exposed to air stream by throttling valve</b>                                                        |
| F02M 11/02        | 1-Punkt Untergruppe | . with throttling valve, e.g. of flap or butterfly type, in a later stage opening automatically                                                                                                                                                                                                                         |
| F02M 11/04        | 2-Punkt Untergruppe | . . the later-stage valves having damping means                                                                                                                                                                                                                                                                         |
| F02M 11/06        | 1-Punkt Untergruppe | . Other carburettors with throttling valve of flap or butterfly type                                                                                                                                                                                                                                                    |
| F02M 11/08        | 1-Punkt Untergruppe | . Register carburettors with throttling valve movable transversally to air passage                                                                                                                                                                                                                                      |
| F02M 11/10        | 1-Punkt Untergruppe | . Register carburettors with rotatable throttling valves                                                                                                                                                                                                                                                                |
| <b>F02M 13/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements of two or more separate carburettors (apparatus for testing, tuning, or synchronising carburettors F02M 19/01; re-atomising condensed fuel or homogenising fuel-air mixture F02M 29/00); Carburettors using more than one fuel (apparatus for adding small quantities of secondary fuel F02M 25/00)</b> |
| F02M 13/02        | 1-Punkt Untergruppe | . Separate carburettors                                                                                                                                                                                                                                                                                                 |
| F02M 13/04        | 2-Punkt Untergruppe | . . structurally united                                                                                                                                                                                                                                                                                                 |
| F02M 13/06        | 1-Punkt Untergruppe | . the carburettors using different fuels                                                                                                                                                                                                                                                                                |
| F02M 13/08        | 1-Punkt Untergruppe | . Carburettors adapted to use liquid and gaseous fuels, e.g. alternatively                                                                                                                                                                                                                                              |
| <b>F02M 15/00</b> | <b>Hauptgruppe</b>  | <b>Carburettors with heating, cooling, or thermal insulating means for combustion-air, fuel, or fuel-air mixture (heating, cooling, or thermally insulating float apparatus F02M 5/00; apparatus for thermally treating combustion-air, fuel, or fuel-air mixture, not being part of a carburettor F02M 31/00)</b>      |
| F02M 15/02        | 1-Punkt Untergruppe | . with heating means, e.g. to combat ice-formation                                                                                                                                                                                                                                                                      |

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| F02M 15/04        | 2-Punkt Untergruppe | . . the means being electrical                                                                                                                                                                                                                                                                                                                                                                  |
| F02M 15/06        | 1-Punkt Untergruppe | . Heat shieldings, e.g. from engine radiations                                                                                                                                                                                                                                                                                                                                                  |
| <b>F02M 17/00</b> | <b>Hauptgruppe</b>  | <b>Carburettors having pertinent characteristics not provided for in, or of interest apart from, the apparatus of main groups F02M 1/00-F02M 15/00 (apparatus for treating combustion-air, fuel, or fuel-air mixture by catalysts, electric means, magnetism, rays, sonic waves, or the like F02M 27/00; combinations of carburettors and low-pressure fuel-injection apparatus F02M 71/00)</b> |
| F02M 17/02        | 1-Punkt Untergruppe | . Floatless carburettors                                                                                                                                                                                                                                                                                                                                                                        |
| F02M 17/04        | 2-Punkt Untergruppe | . . having fuel inlet valve controlled by diaphragm                                                                                                                                                                                                                                                                                                                                             |
| F02M 17/06        | 2-Punkt Untergruppe | . . having overflow chamber determining constant fuel level                                                                                                                                                                                                                                                                                                                                     |
| F02M 17/08        | 1-Punkt Untergruppe | . Carburettors having one or more fuel passages opening in a valve-seat surrounding combustion-air passage, the valve being opened by passing air                                                                                                                                                                                                                                               |
| F02M 17/09        | 2-Punkt Untergruppe | . . the valve being of an eccentrically mounted butterfly type [5]                                                                                                                                                                                                                                                                                                                              |
| F02M 17/10        | 1-Punkt Untergruppe | . Carburettors having one or more fuel passages opening in valve-member of air throttle                                                                                                                                                                                                                                                                                                         |
| F02M 17/12        | 2-Punkt Untergruppe | . . the valve-member being of butterfly type                                                                                                                                                                                                                                                                                                                                                    |
| F02M 17/14        | 1-Punkt Untergruppe | . Carburettors with fuel-supply parts opened and closed in synchronism with engine stroke                                                                                                                                                                                                                                                                                                       |
| F02M 17/16        | 1-Punkt Untergruppe | . Carburettors having continuously-rotating bodies, e.g. surface carburettors (fuel injection by centrifugal forces F02M 69/06)                                                                                                                                                                                                                                                                 |
| F02M 17/18        | 1-Punkt Untergruppe | . Other surface carburettors                                                                                                                                                                                                                                                                                                                                                                    |
| F02M 17/20        | 2-Punkt Untergruppe | . . with fuel bath                                                                                                                                                                                                                                                                                                                                                                              |
| F02M 17/22        | 3-Punkt Untergruppe | . . . with air bubbling through bath                                                                                                                                                                                                                                                                                                                                                            |
| F02M 17/24        | 2-Punkt Untergruppe | . . with wicks                                                                                                                                                                                                                                                                                                                                                                                  |
| F02M 17/26        | 2-Punkt Untergruppe | . . with other wetted bodies                                                                                                                                                                                                                                                                                                                                                                    |
| F02M 17/28        | 3-Punkt Untergruppe | . . . fuel being drawn through a porous body                                                                                                                                                                                                                                                                                                                                                    |
| F02M 17/30        | 1-Punkt Untergruppe | . Carburettors with fire-protecting devices, e.g. combined with fire-extinguishing apparatus                                                                                                                                                                                                                                                                                                    |
| F02M 17/32        | 2-Punkt Untergruppe | . . automatically closing fuel conduits on outbreak of fire                                                                                                                                                                                                                                                                                                                                     |
| F02M 17/34        | 1-Punkt Untergruppe | . Other carburettors combined or associated with other apparatus, e.g. air filters (predominant aspects of the apparatus, <u>see</u> the relevant classes for such apparatus)                                                                                                                                                                                                                   |
| F02M 17/36        | 1-Punkt Untergruppe | . Carburettors having fitments facilitating their cleaning                                                                                                                                                                                                                                                                                                                                      |
| F02M 17/38        | 1-Punkt Untergruppe | . Controlling of carburettors, not otherwise provided for (external control gear F02M 19/12)                                                                                                                                                                                                                                                                                                    |
| F02M 17/40        | 1-Punkt Untergruppe | . Selection of particular materials for carburettors, e.g. sheet metal, plastic, or translucent materials                                                                                                                                                                                                                                                                                       |
| F02M 17/42        | 1-Punkt Untergruppe | . Float-controlled carburettors not otherwise provided for                                                                                                                                                                                                                                                                                                                                      |
| F02M 17/44        | 1-Punkt Untergruppe | . Carburettors characterised by draught direction and not otherwise provided for                                                                                                                                                                                                                                                                                                                |
| F02M 17/46        | 2-Punkt Untergruppe | . . with down-draught                                                                                                                                                                                                                                                                                                                                                                           |
| F02M 17/48        | 2-Punkt Untergruppe | . . with up-draught                                                                                                                                                                                                                                                                                                                                                                             |
| F02M 17/50        | 1-Punkt Untergruppe | . Carburettors having means for combating ice-formation (thermally F02M 15/02)                                                                                                                                                                                                                                                                                                                  |

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| F02M 17/52        | 1-Punkt Untergruppe | . Use of cold, produced by carburettors, for other purposes (apparatus using the cold, <u>see</u> the relevant classes for such apparatus)                                                                                             |
| <b>F02M 19/00</b> | <b>Hauptgruppe</b>  | <b>Details, component parts, or accessories of carburettors, not provided for in, or of interest apart from, the apparatus of groups F02M 1/00-F02M 17/00 (measuring or testing apparatus in general G01)</b>                          |
| F02M 19/01        | 1-Punkt Untergruppe | . Apparatus for testing, tuning, or synchronising carburettors, e.g. carburettor flow stands [3]                                                                                                                                       |
| F02M 19/02        | 1-Punkt Untergruppe | . Metering-orifices, e.g. variable in diameter (variable during operation F02M 7/18)                                                                                                                                                   |
| F02M 19/025       | 2-Punkt Untergruppe | . . Metering orifices not variable in diameter [4]                                                                                                                                                                                     |
| F02M 19/03        | 1-Punkt Untergruppe | . Fuel atomising nozzles; Arrangement of emulsifying air conduits (atomising in general B05B) [4]                                                                                                                                      |
| F02M 19/035       | 2-Punkt Untergruppe | . . Mushroom-shaped atomising nozzles [4]                                                                                                                                                                                              |
| F02M 19/04        | 1-Punkt Untergruppe | . Fuel-metering pins or needles                                                                                                                                                                                                        |
| F02M 19/06        | 1-Punkt Untergruppe | . Other details of fuel conduits                                                                                                                                                                                                       |
| F02M 19/08        | 1-Punkt Untergruppe | . Venturis                                                                                                                                                                                                                             |
| F02M 19/10        | 2-Punkt Untergruppe | . . in multiple arrangement                                                                                                                                                                                                            |
| F02M 19/12        | 1-Punkt Untergruppe | . External control gear, e.g. having dash-pots (dampening means in later stages of multi-stage carburettors F02M 11/04; carburettor control gear in which the carburettor aspects do not predominate, <u>see</u> the relevant classes) |
| <b>F02M 21/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus for supplying engines with non-liquid fuels, e.g. gaseous fuels stored in liquid form</b>                                                                                                                                 |
| F02M 21/02        | 1-Punkt Untergruppe | . for gaseous fuels (apparatus for vaporising liquid fuel by heat F02M 31/00; engines with apparatus generating gas from solid fuel, e.g. from wood, F02B 43/08)                                                                       |
| F02M 21/04        | 2-Punkt Untergruppe | . . Gas-air mixing apparatus (carburettors adapted to use liquid and gaseous fuels F02M 13/08; carburetting gases in general C10J)                                                                                                     |
| F02M 21/06        | 2-Punkt Untergruppe | . . Apparatus for de-liquefying, e.g. by heating (discharging liquefied gases in general F17C)                                                                                                                                         |
| F02M 21/08        | 1-Punkt Untergruppe | . for non-gaseous fuels (for engines operating on fuel containing oxidants F02B)                                                                                                                                                       |
| F02M 21/10        | 2-Punkt Untergruppe | . . for fuels with low melting point, e.g. apparatus having heating means                                                                                                                                                              |
| F02M 21/12        | 1-Punkt Untergruppe | . for fuels in pulverised state (engine plants with fuel-pulverising apparatus F02B)                                                                                                                                                   |
| <b>F02M 23/00</b> | <b>Hauptgruppe</b>  | <b><u>Engine-pertinent apparatus for feeding, or treating before their admission to engine, combustion-air, fuel, or fuel-air mixture</u></b><br><b>Apparatus for adding secondary air to fuel-air mixture</b>                         |
| F02M 23/02        | 1-Punkt Untergruppe | . with personal control                                                                                                                                                                                                                |
| F02M 23/03        | 2-Punkt Untergruppe | . . the secondary air-valve controlled by main combustion-air throttle [5]                                                                                                                                                             |
| F02M 23/04        | 1-Punkt Untergruppe | . with automatic control                                                                                                                                                                                                               |
| F02M 23/06        | 2-Punkt Untergruppe | . . dependent on engine speed                                                                                                                                                                                                          |
| F02M 23/08        | 2-Punkt Untergruppe | . . dependent on pressure in main combustion-air induction system                                                                                                                                                                      |
| F02M 23/09        | 3-Punkt Untergruppe | . . . using valves directly opened by low pressure [6]                                                                                                                                                                                 |
| F02M 23/10        | 2-Punkt Untergruppe | . . dependent on temperature, e.g. engine temperature                                                                                                                                                                                  |

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| F02M 23/12        | 1-Punkt Untergruppe | . characterised by being combined with device for, or by secondary air effecting, re-atomising of condensed fuel                                                                                                                            |
| F02M 23/14        | 1-Punkt Untergruppe | . characterised by adding hot air                                                                                                                                                                                                           |
| <b>F02M 25/00</b> | <b>Hauptgruppe</b>  | <b>Engine-pertinent apparatus for adding non-fuel substances or small quantities of secondary fuel to combustion-air, main fuel, or fuel-air mixture (F02M 43/00 takes precedence; adding secondary air to fuel-air mixture F02M 23/00)</b> |
| F02M 25/022       | 1-Punkt Untergruppe | . Adding fuel and water emulsion, water or steam [6]                                                                                                                                                                                        |
| F02M 25/025       | 2-Punkt Untergruppe | . . Adding water [6]                                                                                                                                                                                                                        |
| F02M 25/028       | 3-Punkt Untergruppe | . . . into the charge intakes [6]                                                                                                                                                                                                           |
| F02M 25/03        | 3-Punkt Untergruppe | . . . into the cylinders [6]                                                                                                                                                                                                                |
| F02M 25/032       | 2-Punkt Untergruppe | . . Producing and adding steam [6]                                                                                                                                                                                                          |
| F02M 25/035       | 3-Punkt Untergruppe | . . . into the charge intakes [6]                                                                                                                                                                                                           |
| F02M 25/038       | 3-Punkt Untergruppe | . . . into the cylinders [6]                                                                                                                                                                                                                |
| F02M 25/06        | 1-Punkt Untergruppe | . adding lubricant vapours or exhaust gases                                                                                                                                                                                                 |
| F02M 25/07        | 2-Punkt Untergruppe | . . adding exhaust gases [5]                                                                                                                                                                                                                |
| F02M 25/08        | 1-Punkt Untergruppe | . adding fuel vapours drawn from engine fuel reservoir                                                                                                                                                                                      |
| F02M 25/10        | 1-Punkt Untergruppe | . adding acetylene, non-waterborne hydrogen, non-airborne oxygen, or ozone                                                                                                                                                                  |
| F02M 25/12        | 2-Punkt Untergruppe | . . the apparatus having means for generating such gases (using rays and simultaneously generating ozone F02M 27/06)                                                                                                                        |
| F02M 25/14        | 1-Punkt Untergruppe | . adding anti-knock agents, not provided for in groups F02M 25/022-F02M 25/10                                                                                                                                                               |
| <b>F02M 27/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus for treating combustion-air, fuel, or fuel-air mixture, by catalysts, electric means, magnetism, rays, sonic waves, or the like</b>                                                                                            |
| F02M 27/02        | 1-Punkt Untergruppe | . by catalysts                                                                                                                                                                                                                              |
| F02M 27/04        | 1-Punkt Untergruppe | . by electric means or magnetism                                                                                                                                                                                                            |
| F02M 27/06        | 1-Punkt Untergruppe | . by rays                                                                                                                                                                                                                                   |
| F02M 27/08        | 1-Punkt Untergruppe | . by sonic or ultrasonic waves                                                                                                                                                                                                              |
| <b>F02M 29/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus for re-atomising condensed fuel or homogenising fuel-air mixture (combined with secondary-air supply F02M 23/12)</b>                                                                                                           |
| F02M 29/02        | 1-Punkt Untergruppe | . having rotary parts                                                                                                                                                                                                                       |
| F02M 29/04        | 1-Punkt Untergruppe | . having screens, gratings, baffles, or the like (rotary F02M 29/02)                                                                                                                                                                        |
| F02M 29/06        | 2-Punkt Untergruppe | . . generating whirling motion of mixture                                                                                                                                                                                                   |
| F02M 29/08        | 2-Punkt Untergruppe | . . having spirally-wound wires                                                                                                                                                                                                             |
| F02M 29/10        | 2-Punkt Untergruppe | . . adjustable                                                                                                                                                                                                                              |
| F02M 29/12        | 1-Punkt Untergruppe | . having homogenising valves held open by mixture current                                                                                                                                                                                   |
| F02M 29/14        | 1-Punkt Untergruppe | . re-atomising or homogenising being effected by unevenness of internal surfaces of mixture intake                                                                                                                                          |
| <b>F02M 31/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus for thermally treating combustion-air, fuel, or fuel-air mixture (F02M 21/06, F02M 21/10 take precedence; such apparatus being part of a carburettor or fuel-injection apparatus</b>                                           |

| Symbol                                                                                  | Typ                 | Titel                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>F02M 15/00, F02M 53/00; adding hot secondary air to fuel-air mixture F02M 23/14)</b> |                     |                                                                                                                                                                                                         |
| F02M 31/02                                                                              | 1-Punkt Untergruppe | . for heating                                                                                                                                                                                           |
| F02M 31/04                                                                              | 2-Punkt Untergruppe | . . combustion-air or fuel-air mixture (electrically F02M 31/12; by using heat from working cylinders or cylinder heads F02M 31/14; heating of combustion-air as an engine starting aid F02M 17/04) [4] |
| F02M 31/06                                                                              | 3-Punkt Untergruppe | . . . by hot gases, e.g. by mixing cold and hot air                                                                                                                                                     |
| F02M 31/07                                                                              | 4-Punkt Untergruppe | . . . . Temperature-responsive control, e.g. using thermostatically-controlled valves (F02M 31/083 takes precedence) [6]                                                                                |
| F02M 31/08                                                                              | 4-Punkt Untergruppe | . . . . the gases being exhaust gases                                                                                                                                                                   |
| F02M 31/083                                                                             | 5-Punkt Untergruppe | . . . . . Temperature-responsive control of the amount of exhaust gas or combustion air directed to the heat exchange surface [6]                                                                       |
| F02M 31/087                                                                             | 5-Punkt Untergruppe | . . . . . Heat-exchange arrangements between the air intake and exhaust gas passages, e.g. by means of contact between the passages [5]                                                                 |
| F02M 31/093                                                                             | 6-Punkt Untergruppe | . . . . . Air intake passage surrounding the exhaust gas passage; Exhaust gas passage surrounding the air intake passage [5]                                                                            |
| F02M 31/10                                                                              | 3-Punkt Untergruppe | . . . by hot liquids, e.g. lubricants                                                                                                                                                                   |
| F02M 31/12                                                                              | 2-Punkt Untergruppe | . . electrically                                                                                                                                                                                        |
| F02M 31/125                                                                             | 3-Punkt Untergruppe | . . . Fuel [5]                                                                                                                                                                                          |
| F02M 31/13                                                                              | 3-Punkt Untergruppe | . . . Combustion air [5]                                                                                                                                                                                |
| F02M 31/135                                                                             | 3-Punkt Untergruppe | . . . Fuel-air mixture [5]                                                                                                                                                                              |
| F02M 31/14                                                                              | 2-Punkt Untergruppe | . . by using heat from working cylinders or cylinder heads                                                                                                                                              |
| F02M 31/16                                                                              | 2-Punkt Untergruppe | . . Other apparatus for heating fuel                                                                                                                                                                    |
| F02M 31/18                                                                              | 3-Punkt Untergruppe | . . . to vaporise fuel                                                                                                                                                                                  |
| F02M 31/20                                                                              | 1-Punkt Untergruppe | . for cooling (cooling of charging-air or of scavenging-air F02B)                                                                                                                                       |
| <b>F02M 33/00</b>                                                                       | <b>Hauptgruppe</b>  | <b>Other apparatus for treating combustion-air, fuel or fuel-air mixture (combustion-air cleaners F02M 35/00; arrangements for purifying liquid fuel F02M 37/22)</b>                                    |
| F02M 33/02                                                                              | 1-Punkt Untergruppe | . for collecting and returning condensed fuel                                                                                                                                                           |
| F02M 33/04                                                                              | 2-Punkt Untergruppe | . . returning to the intake passage [5]                                                                                                                                                                 |
| F02M 33/06                                                                              | 3-Punkt Untergruppe | . . . with simultaneous heat supply [5]                                                                                                                                                                 |
| F02M 33/08                                                                              | 2-Punkt Untergruppe | . . returning to the fuel tank [5]                                                                                                                                                                      |
| <b>F02M 35/00</b>                                                                       | <b>Hauptgruppe</b>  | <b>Combustion-air cleaners, air intakes, intake silencers, or induction systems specially adapted for, or arranged on, internal-combustion engines (air cleaners in general B01D)</b>                   |
| F02M 35/02                                                                              | 1-Punkt Untergruppe | . Air cleaners                                                                                                                                                                                          |
| F02M 35/022                                                                             | 2-Punkt Untergruppe | . . acting by gravity, by centrifugal, or by other inertial forces, e.g. with moistened walls [2]                                                                                                       |
| F02M 35/024                                                                             | 2-Punkt Untergruppe | . . using filters, e.g. moistened (F02M 35/026 takes precedence; cleaning of the filtering material F02M 35/08) [2]                                                                                     |
| F02M 35/026                                                                             | 2-Punkt Untergruppe | . . acting by guiding the air over or through an oil or other liquid bath, e.g. combined with filters [2]                                                                                               |
| F02M 35/04                                                                              | 2-Punkt Untergruppe | . . specially arranged with respect to engine; Mounting thereon                                                                                                                                         |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F02M 35/06        | 3-Punkt Untergruppe | . . . combined or associated with engine's cooling blower or fan, or with flywheel                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| F02M 35/08        | 2-Punkt Untergruppe | . . with means for removing dust from cleaners; with means for indicating clogging; with by-pass means                                                                                                                                                                                                                                                                                                                                                                                                                |
| F02M 35/09        | 3-Punkt Untergruppe | . . . Clogging indicators [6]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| F02M 35/10        | 1-Punkt Untergruppe | . Air intakes; Induction systems (using kinetic or wave energy of charge in induction systems for improving quantity of charge F02B)                                                                                                                                                                                                                                                                                                                                                                                  |
| F02M 35/104       | 2-Punkt Untergruppe | . . Intake manifolds [6]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F02M 35/108       | 3-Punkt Untergruppe | . . . with primary and secondary intake passages [6]                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| F02M 35/112       | 3-Punkt Untergruppe | . . . for engines with cylinders all in one line (F02M 35/108 takes precedence) [6]                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| F02M 35/116       | 3-Punkt Untergruppe | . . . for engines with cylinders in V-arrangement or arranged oppositely relative to the main shaft (F02M 35/108 takes precedence) [6]                                                                                                                                                                                                                                                                                                                                                                                |
| F02M 35/12        | 1-Punkt Untergruppe | . Intake silencers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| F02M 35/14        | 1-Punkt Untergruppe | . Combined air cleaners and silencers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| F02M 35/16        | 1-Punkt Untergruppe | . characterised by use in vehicles (predominant vehicle aspects, <u>see</u> the relevant classes for the vehicles)                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>F02M 37/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus or systems for feeding liquid fuel from storage containers to carburettors or fuel-injection apparatus (F02M 69/00 takes precedence; feeding liquid fuel to combustion apparatus, in general F23K 5/00; fuel supply to apparatus for generating combustion products of high pressure or high velocity F23R 3/28); Arrangements for purifying liquid fuel specially adapted for, or arranged on, internal-combustion engines (separating apparatus, filters <u>per se</u> B01D; centrifuges B04B) [5]</b> |
| F02M 37/02        | 1-Punkt Untergruppe | . Feeding by means of suction apparatus, e.g. by air flow through carburettors (by driven pumps F02M 37/04)                                                                                                                                                                                                                                                                                                                                                                                                           |
| F02M 37/04        | 1-Punkt Untergruppe | . Feeding by means of driven pumps (pump construction F04)                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| F02M 37/06        | 2-Punkt Untergruppe | . . mechanically driven                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| F02M 37/08        | 2-Punkt Untergruppe | . . electrically driven                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| F02M 37/10        | 3-Punkt Untergruppe | . . . submerged in fuel, e.g. in reservoir                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| F02M 37/12        | 2-Punkt Untergruppe | . . fluid-driven, e.g. by compressed combustion-air                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| F02M 37/14        | 2-Punkt Untergruppe | . . the pumps being combined with other apparatus                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| F02M 37/16        | 2-Punkt Untergruppe | . . characterised by provision of personally-, e.g. manually-, operated pumps                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| F02M 37/18        | 2-Punkt Untergruppe | . . characterised by provision of main and auxiliary pumps                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| F02M 37/20        | 1-Punkt Untergruppe | . characterised by means for preventing vapour lock                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| F02M 37/22        | 1-Punkt Untergruppe | . Arrangements for purifying liquid fuel specially adapted for, or arranged on, internal-combustion engines, e.g. arrangement in the feeding system [3]                                                                                                                                                                                                                                                                                                                                                               |
|                   |                     | <b><u>Fuel-injection apparatus (carrying the fuel into cylinders by high-pressure gas F02M 67/00; low-pressure fuel-injection F02M 69/00)</u></b>                                                                                                                                                                                                                                                                                                                                                                     |
| <b>F02M 39/00</b> | <b>Hauptgruppe</b>  | <b>Arrangements of fuel-injection apparatus with respect to engines; Pump drives adapted to such arrangements (F02M 49/00 takes precedence; arrangements of injectors F02M 61/14)</b>                                                                                                                                                                                                                                                                                                                                 |
| F02M 39/02        | 1-Punkt Untergruppe | . Arrangements of fuel-injection apparatus to facilitate the driving of pumps; Arrangements of fuel-injection pumps; Pump drives                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>F02M 41/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus with two or more injectors fed from a common pressure-source sequentially by means of a distributor</b>                                                                                                                                                                                                                                                                                                                                                                                   |



| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                      |
|-------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F02M 41/02        | 1-Punkt Untergruppe | . the distributor being spaced from pumping elements                                                                                                                                                                                                                                       |
| F02M 41/04        | 2-Punkt Untergruppe | . . the distributor reciprocating                                                                                                                                                                                                                                                          |
| F02M 41/06        | 2-Punkt Untergruppe | . . the distributor rotating                                                                                                                                                                                                                                                               |
| F02M 41/08        | 1-Punkt Untergruppe | . the distributor and pumping elements being combined                                                                                                                                                                                                                                      |
| F02M 41/10        | 2-Punkt Untergruppe | . . pump pistons acting as the distributor                                                                                                                                                                                                                                                 |
| F02M 41/12        | 3-Punkt Untergruppe | . . . the pistons rotating to act as the distributor                                                                                                                                                                                                                                       |
| F02M 41/14        | 2-Punkt Untergruppe | . . rotary distributor supporting pump pistons                                                                                                                                                                                                                                             |
| F02M 41/16        | 1-Punkt Untergruppe | . characterised by the distributor being fed from a constant-pressure source, e.g. accumulator                                                                                                                                                                                             |
| <b>F02M 43/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus operating simultaneously on two or more fuels or on a liquid fuel and another liquid, e.g. the other liquid being an anti-knock additive</b>                                                                                                                   |
| F02M 43/02        | 1-Punkt Untergruppe | . Pumps peculiar thereto                                                                                                                                                                                                                                                                   |
| F02M 43/04        | 1-Punkt Untergruppe | . Injectors peculiar thereto                                                                                                                                                                                                                                                               |
| <b>F02M 45/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus characterised by having a cyclic delivery of specific time/pressure or time/quantity relationship (fuel injectors having such deliveries by means of valves furnished at seated ends with pintle- or plug-shaped extensions F02M 61/06)</b>                    |
| F02M 45/02        | 1-Punkt Untergruppe | . with each cyclic delivery being separated into two or more parts                                                                                                                                                                                                                         |
| F02M 45/04        | 2-Punkt Untergruppe | . . with a small initial part                                                                                                                                                                                                                                                              |
| F02M 45/06        | 3-Punkt Untergruppe | . . . Pumps peculiar thereto                                                                                                                                                                                                                                                               |
| F02M 45/08        | 3-Punkt Untergruppe | . . . Injectors peculiar thereto                                                                                                                                                                                                                                                           |
| F02M 45/10        | 2-Punkt Untergruppe | . . Other injectors with multiple-part delivery, e.g. with vibrating valves                                                                                                                                                                                                                |
| F02M 45/12        | 1-Punkt Untergruppe | . providing a continuous delivery with variable pressure                                                                                                                                                                                                                                   |
| <b>F02M 47/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus operated cyclically with fuel-injection valves actuated by fluid pressure ( F02M 49/00 takes precedence; apparatus with injection valves opened by fuel pressure and closed by non-fluid means, <u>see</u> the groups providing for other characteristics)</b> |
| F02M 47/02        | 1-Punkt Untergruppe | . of accumulator-injector type, i.e. having fuel pressure of accumulator tending to open, and fuel pressure in other chamber tending to close, injection valves, and having means for periodically releasing that closing pressure                                                         |
| F02M 47/04        | 1-Punkt Untergruppe | . using fluid, other than fuel, for injection-valve actuation                                                                                                                                                                                                                              |
| F02M 47/06        | 1-Punkt Untergruppe | . Other fuel injectors peculiar thereto                                                                                                                                                                                                                                                    |
| <b>F02M 49/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus in which injection pumps are driven, or injectors are actuated, by the pressure in engine working cylinders, or by impact of engine working piston</b>                                                                                                         |
| F02M 49/02        | 1-Punkt Untergruppe | . using the cylinder pressure, e.g. compression end pressure                                                                                                                                                                                                                               |
| F02M 49/04        | 1-Punkt Untergruppe | . using the piston impact                                                                                                                                                                                                                                                                  |
| <b>F02M 51/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus characterised by being operated electrically</b>                                                                                                                                                                                                               |
| F02M 51/02        | 1-Punkt Untergruppe | . specially for low-pressure fuel-injection (pumps <u>per se</u> F02M 51/04; injectors <u>per se</u> F02M 51/08)                                                                                                                                                                           |
| F02M 51/04        | 1-Punkt Untergruppe | . Pumps peculiar thereto                                                                                                                                                                                                                                                                   |
| F02M 51/06        | 1-Punkt Untergruppe | . Injectors peculiar thereto                                                                                                                                                                                                                                                               |

| Symbol            | Typ                 | Titel                                                                                                                                  |
|-------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| F02M 51/08        | 2-Punkt Untergruppe | . . specially for low-pressure fuel-injection                                                                                          |
| <b>F02M 53/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus characterised by having heating, cooling, or thermally-insulating means</b>                                |
| F02M 53/02        | 1-Punkt Untergruppe | . with fuel-heating means, e.g. for vaporising                                                                                         |
| F02M 53/04        | 1-Punkt Untergruppe | . Injectors with heating, cooling, or thermally-insulating means                                                                       |
| F02M 53/06        | 2-Punkt Untergruppe | . . with fuel-heating means, e.g. for vaporising                                                                                       |
| F02M 53/08        | 2-Punkt Untergruppe | . . with air cooling                                                                                                                   |
| <b>F02M 55/00</b> | <b>Hauptgruppe</b>  | <b>Fuel-injection apparatus characterised by their fuel conduits or their venting means</b>                                            |
| F02M 55/02        | 1-Punkt Untergruppe | . Conduits between injection pumps and injectors                                                                                       |
| F02M 55/04        | 1-Punkt Untergruppe | . Means for damping vibrations in injection-pump inlets                                                                                |
| <b>F02M 57/00</b> | <b>Hauptgruppe</b>  | <b>Fuel injectors combined or associated with other devices</b>                                                                        |
| F02M 57/02        | 1-Punkt Untergruppe | . Injectors structurally combined with fuel-injection pumps                                                                            |
| F02M 57/04        | 1-Punkt Untergruppe | . the devices being combustion-air intake or exhaust valves                                                                            |
| F02M 57/06        | 1-Punkt Untergruppe | . the devices being sparking-plugs                                                                                                     |
| <b>F02M 59/00</b> | <b>Hauptgruppe</b>  | <b>Pumps specially adapted for fuel-injection and not provided for in groups F02M 39/00-F02M 57/00 (general features of pumps F04)</b> |
| F02M 59/02        | 1-Punkt Untergruppe | . of reciprocating-piston type                                                                                                         |
| F02M 59/04        | 2-Punkt Untergruppe | . . characterised by special arrangement of cylinders with respect to piston-driving shaft, e.g. arranged parallel to that shaft       |
| F02M 59/06        | 3-Punkt Untergruppe | . . . with cylinders arranged radially to driving shaft, e.g. in V- or star-arrangement                                                |
| F02M 59/08        | 2-Punkt Untergruppe | . . characterised by two or more pumping elements with conjoint outlet                                                                 |
| F02M 59/10        | 2-Punkt Untergruppe | . . characterised by the piston drive                                                                                                  |
| F02M 59/12        | 1-Punkt Untergruppe | . having other positive-displacement pumping elements, e.g. rotary                                                                     |
| F02M 59/14        | 2-Punkt Untergruppe | . . of elastic-wall type                                                                                                               |
| F02M 59/16        | 1-Punkt Untergruppe | . characterised by having multi-stage compression of fuel                                                                              |
| F02M 59/18        | 1-Punkt Untergruppe | . characterised by the pumping action being achieved through release of pre-compressed springs                                         |
| F02M 59/20        | 1-Punkt Untergruppe | . Varying fuel delivery in quantity or timing                                                                                          |
| F02M 59/22        | 2-Punkt Untergruppe | . . Varying quantity by adjusting cylinder-head space                                                                                  |
| F02M 59/24        | 2-Punkt Untergruppe | . . with constant-length-stroke pistons having variable effective portion of stroke                                                    |
| F02M 59/26        | 3-Punkt Untergruppe | . . . caused by movements of pistons relative to their cylinders                                                                       |
| F02M 59/28        | 4-Punkt Untergruppe | . . . . Mechanisms therefor                                                                                                            |
| F02M 59/30        | 2-Punkt Untergruppe | . . with variable-length-stroke pistons                                                                                                |
| F02M 59/32        | 2-Punkt Untergruppe | . . fuel delivery being controlled by means of fuel-displaced auxiliary pistons, which effect injection                                |
| F02M 59/34        | 2-Punkt Untergruppe | . . by throttling of passages to pumping elements or of overflow passages                                                              |
| F02M 59/36        | 2-Punkt Untergruppe | . . by variably-timed valves controlling fuel passages                                                                                 |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F02M 59/38        | 1-Punkt Untergruppe | . Pumps characterised by adaptations to special uses or conditions                                                                                                                                                                                                                                                                                                        |
| F02M 59/40        | 2-Punkt Untergruppe | . . for reversible engines                                                                                                                                                                                                                                                                                                                                                |
| F02M 59/42        | 2-Punkt Untergruppe | . . for starting of engines                                                                                                                                                                                                                                                                                                                                               |
| F02M 59/44        | 1-Punkt Untergruppe | . Details, component parts, or accessories not provided for in, or of interest apart from, the apparatus of groups F02M 59/02-F02M 59/42                                                                                                                                                                                                                                  |
| F02M 59/46        | 2-Punkt Untergruppe | . . Valves (in general F16K)                                                                                                                                                                                                                                                                                                                                              |
| F02M 59/48        | 2-Punkt Untergruppe | . . Assembling; Disassembling; Replacing                                                                                                                                                                                                                                                                                                                                  |
| <b>F02M 61/00</b> | <b>Hauptgruppe</b>  | <b>Fuel injectors not provided for in groups F02M 39/00-F02M 57/00</b>                                                                                                                                                                                                                                                                                                    |
| F02M 61/02        | 1-Punkt Untergruppe | . of valveless type                                                                                                                                                                                                                                                                                                                                                       |
| F02M 61/04        | 1-Punkt Untergruppe | . having valves (valves in general F16K)                                                                                                                                                                                                                                                                                                                                  |
| F02M 61/06        | 2-Punkt Untergruppe | . . the valves being furnished at seated ends with pintle- or plug-shaped extensions                                                                                                                                                                                                                                                                                      |
| F02M 61/08        | 2-Punkt Untergruppe | . . the valves opening in direction of fuel flow                                                                                                                                                                                                                                                                                                                          |
| F02M 61/10        | 2-Punkt Untergruppe | . . Other injectors with elongated valve bodies, i.e. of needle-valve type                                                                                                                                                                                                                                                                                                |
| F02M 61/12        | 3-Punkt Untergruppe | . . . characterised by the provision of guiding or centring means for valve bodies                                                                                                                                                                                                                                                                                        |
| F02M 61/14        | 1-Punkt Untergruppe | . Arrangements of injectors with respect to engines; Mounting of injectors                                                                                                                                                                                                                                                                                                |
| F02M 61/16        | 1-Punkt Untergruppe | . Details not provided for in, or of interest apart from, the apparatus of groups F02M 61/02-F02M 61/14                                                                                                                                                                                                                                                                   |
| F02M 61/18        | 2-Punkt Untergruppe | . . Injection nozzles, e.g. having valve-seats                                                                                                                                                                                                                                                                                                                            |
| F02M 61/20        | 2-Punkt Untergruppe | . . Closing valves mechanically, e.g. arrangements of springs or weights                                                                                                                                                                                                                                                                                                  |
| <b>F02M 63/00</b> | <b>Hauptgruppe</b>  | <b>Other fuel-injection apparatus having pertinent characteristics not provided for in groups F02M 39/00-F02M 57/00; Details, component parts, or accessories of fuel-injection apparatus, not provided for in, or of interest apart from, the apparatus of groups F02M 39/00-F02M 61/00</b>                                                                              |
| F02M 63/02        | 1-Punkt Untergruppe | . Fuel-injection apparatus having several injectors fed by a common pumping element, or having several pumping elements feeding a common injector; Fuel-injection apparatus having provisions for cutting-out pumps, pumping elements, or injectors; Fuel-injection apparatus having provisions for variably interconnecting pumping elements and injectors alternatively |
| F02M 63/04        | 1-Punkt Untergruppe | . Fuel-injection apparatus having injection valves held closed by a cyclically-operated mechanism for a time and automatically opened by fuel pressure, e.g. of constant-pressure pump or accumulator, when that mechanism releases the valve                                                                                                                             |
| F02M 63/06        | 1-Punkt Untergruppe | . Use of pressure wave generated by fuel inertia to open injection valves                                                                                                                                                                                                                                                                                                 |
| <b>F02M 65/00</b> | <b>Hauptgruppe</b>  | <b>Testing fuel-injection apparatus, e.g. testing injection timing</b>                                                                                                                                                                                                                                                                                                    |
|                   |                     | <b><u>Fuel-injection by high-pressure gas carrying the fuel into engine working cylinders; Low-pressure fuel-injection</u></b>                                                                                                                                                                                                                                            |
| <b>F02M 67/00</b> | <b>Hauptgruppe</b>  | <b>Apparatus in which fuel-injection is effected by means of high-pressure gas, the gas carrying the fuel into working cylinders of the engine, e.g. air-injection type (using compressed air for low-pressure fuel-injection apparatus F02M 69/08)</b>                                                                                                                   |
| F02M 67/02        | 1-Punkt Untergruppe | . the gas being compressed air, e.g. compressed in pumps (arrangements or adaptations of such pumps F02B )                                                                                                                                                                                                                                                                |
| F02M 67/04        | 2-Punkt Untergruppe | . . the air being extracted from working cylinders of the engine                                                                                                                                                                                                                                                                                                          |
| F02M 67/06        | 1-Punkt Untergruppe | . the gas being other than air, e.g. steam, combustion gas                                                                                                                                                                                                                                                                                                                |
| F02M 67/08        | 2-Punkt Untergruppe | . . the gas being generated by combustion of part of fuel other than in engine working cylinders                                                                                                                                                                                                                                                                          |

| Symbol            | Typ                 | Titel                                                                                                                                                                                                                                                                                                           |
|-------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F02M 67/10        | 1-Punkt Untergruppe | . Injectors peculiar thereto, e.g. of valveless type                                                                                                                                                                                                                                                            |
| F02M 67/12        | 2-Punkt Untergruppe | . . having valves                                                                                                                                                                                                                                                                                               |
| F02M 67/14        | 1-Punkt Untergruppe | . characterised by provisions for injecting different fuels, e.g. main fuel and readily self-igniting starting-fuel                                                                                                                                                                                             |
| <b>F02M 69/00</b> | <b>Hauptgruppe</b>  | <b>Low-pressure fuel-injection apparatus (electrically- operated F02M 51/00)</b>                                                                                                                                                                                                                                |
| F02M 69/02        | 1-Punkt Untergruppe | . Pumps peculiar thereto                                                                                                                                                                                                                                                                                        |
| F02M 69/04        | 1-Punkt Untergruppe | . Injectors peculiar thereto                                                                                                                                                                                                                                                                                    |
| F02M 69/06        | 1-Punkt Untergruppe | . characterised by the pressurisation of the fuel being caused by centrifugal force acting on the fuel                                                                                                                                                                                                          |
| F02M 69/08        | 1-Punkt Untergruppe | . characterised by the fuel being carried by compressed air into main stream of combustion-air                                                                                                                                                                                                                  |
| F02M 69/10        | 1-Punkt Untergruppe | . peculiar to scavenged two-stroke engines, e.g. injecting into crankcase-pump chamber                                                                                                                                                                                                                          |
| F02M 69/12        | 1-Punkt Untergruppe | . comprising a fuel-displaced free piston for intermittently metering and supplying fuel to injection nozzles [5]                                                                                                                                                                                               |
| F02M 69/14        | 1-Punkt Untergruppe | . having cyclically-operated valves connecting injection nozzles to a source of fuel under pressure during the injection period [5]                                                                                                                                                                             |
| F02M 69/16        | 1-Punkt Untergruppe | . characterised by means for metering continuous fuel flow to injectors or means for varying fuel pressure upstream of injectors [5]                                                                                                                                                                            |
| F02M 69/18        | 2-Punkt Untergruppe | . . the means being metering valves throttling fuel passages to injectors or by-pass valves throttling overflow passages, the metering valves being actuated by a device responsive to the engine working parameters, e.g. engine load, speed, temperature or quantity of air (F02M 69/26 takes precedence) [5] |
| F02M 69/20        | 3-Punkt Untergruppe | . . . the device being a servo-motor, e.g. using engine intake air pressure or vacuum (F02M 69/22 takes precedence) [5]                                                                                                                                                                                         |
| F02M 69/22        | 3-Punkt Untergruppe | . . . the device comprising a member movably mounted in the air intake conduit and displaced according to the quantity of air admitted to the engine [5]                                                                                                                                                        |
| F02M 69/24        | 3-Punkt Untergruppe | . . . the device comprising a member for transmitting the movement of the air throttle valve actuated by the operator to the valves controlling fuel passages [5]                                                                                                                                               |
| F02M 69/26        | 2-Punkt Untergruppe | . . the means varying fuel pressure in a fuel by-pass passage, the pressure acting on a throttle valve against the action of metered or throttled fuel pressure for variably throttling fuel flow to injection nozzles, e.g. to keep constant the pressure differential at the metering valve [5]               |
| F02M 69/28        | 1-Punkt Untergruppe | . characterised by means for cutting-out the fuel supply to the engine or to main injectors during certain operating periods, e.g. deceleration [5]                                                                                                                                                             |
| F02M 69/30        | 1-Punkt Untergruppe | . characterised by means for facilitating the starting-up or idling of engines or by means for enriching fuel charge, e.g. below operational temperatures or upon high power demand of engines (at acceleration F02M 69/44) [5]                                                                                 |
| F02M 69/32        | 2-Punkt Untergruppe | . . with an air by-pass around the air throttle valve or with an auxiliary air passage, e.g. with a variably controlled valve therein [5]                                                                                                                                                                       |
| F02M 69/34        | 2-Punkt Untergruppe | . . with an auxiliary fuel circuit supplying fuel to the engine, e.g. with the fuel pump outlet being directly connected to the injection nozzles [5]                                                                                                                                                           |
| F02M 69/36        | 2-Punkt Untergruppe | . . having an enrichment mechanism modifying fuel flow to injectors, e.g. by acting on the fuel metering device or on the valves throttling fuel passages to injection nozzles or overflow passages [5]                                                                                                         |
| F02M 69/38        | 3-Punkt Untergruppe | . . . using fuel pressure, e.g. by varying fuel pressure in the control chambers of the fuel metering device ( F02M 69/26 takes precedence) [5]                                                                                                                                                                 |
| F02M 69/40        | 3-Punkt Untergruppe | . . . using variably controlled air pressure, e.g. by modifying the intake air vacuum signal acting on the fuel metering device [5]                                                                                                                                                                             |

| Symbol            | Typ                 | Titel                                                                                                                                                                                       |
|-------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F02M 69/42        | 3-Punkt Untergruppe | . . . using other means than variable fluid pressure, e.g. acting on the fuel metering device mechanically or electrically [5]                                                              |
| F02M 69/44        | 1-Punkt Untergruppe | . characterised by means for supplying extra fuel to the engine on sudden air throttle opening, e.g at acceleration [5]                                                                     |
| F02M 69/46        | 1-Punkt Untergruppe | . Details, component parts or accessories not provided for in, or of interest apart from, the apparatus covered by groups F02M 69/02-F02M 69/44 [5]                                         |
| F02M 69/48        | 2-Punkt Untergruppe | . . Arrangement of air sensors [5]                                                                                                                                                          |
| F02M 69/50        | 2-Punkt Untergruppe | . . Arrangement of fuel distributors [5]                                                                                                                                                    |
| F02M 69/52        | 2-Punkt Untergruppe | . . Arrangement of fuel metering devices [5]                                                                                                                                                |
| F02M 69/54        | 2-Punkt Untergruppe | . . Arrangement of fuel pressure regulators [5]                                                                                                                                             |
| <b>F02M 71/00</b> | <b>Hauptgruppe</b>  | <b>Combinations of carburettors and low-pressure fuel-injection apparatus (means for enriching charge on sudden air throttle opening of carburettors F02M 7/06)</b>                         |
| F02M 71/02        | 1-Punkt Untergruppe | . with fuel-air mixture being produced by the carburettor and being compressed by a pump for subsequent injection into main combustion-air (adaptations or arrangements of such pumps F02B) |
| F02M 71/04        | 1-Punkt Untergruppe | . with carburettor being used at starting or idling only and injection apparatus being used during normal operation of engine                                                               |
| <b>F02M 99/00</b> | <b>Hauptgruppe</b>  | <b>Subject matter not provided for in other groups of this subclass [2006.01]</b>                                                                                                           |