CPC  COOPERATIVE PATENT CLASSIFICATION

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

ENGINES OR PUMPS

F02  COMBUSTION ENGINES; HOT-GAS OR COMBUSTION-PRODUCT ENGINE PLANTS

F02F  CYLINDERS, PISTONS OR CASINGS, FOR COMBUSTION ENGINES;
ARRANGEMENTS OF SEALINGS IN COMBUSTION ENGINES (specially adapted for
rotary-piston or oscillating-piston internal-combustion engines F02B; specially adapted for gas-
turbine plants F02C; specially adapted for jet-propulsion plants F02K)

NOTES
1. Attention is drawn to the notes preceding class F01.
2. In considering the relationship between class F16 and subclass F02F, class F16 will take precedence unless the subject-matter is specific to combustion engines.

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

1/00  Cylinders; Cylinder heads (in general F16J)
1/002 . [Integrally formed cylinders and cylinder heads]
1/004 . [Cylinder liners (F02F 1/08, F02F 1/16 take precedence)]
2001/006 . [having a ring at the inside of a liner or cylinder for preventing the deposit of carbon oil particles, e.g. oil scrapers]
2001/008 . [Stress problems, especially related to thermal stress]
1/02 . having cooling means (cylinder heads F02F 1/26)
1/04 . for air cooling
1/045 . . [Attachment of cylinders to crankcase]
1/06 . . Shape or arrangement of cooling fins; Finned cylinders
1/065 . . . [with means for directing or distributing cooling medium]
1/08 . . running-liner and cooling-part of cylinder being different parts or of different material
1/10 . . for liquid cooling
1/102 . . [Attachment of cylinders to crankcase]
2001/104 . . . [using an open deck, i.e. the water jacket is open at the block top face]
2001/106 . . . [using a closed deck, i.e. the water jacket is not open at the block top face]
1/108 . . . [Siamese-type cylinders, i.e. cylinders cast together]
1/12 . . Preventing corrosion of liquid-swept surfaces
1/14 . . . Cylinders with means for directing, guiding or distributing liquid stream
1/16 . . . Cylinder liners of wet type
1/163 . . . [the liner being midsupported]
1/166 . . . [Spacer decks]
1/18 . Other cylinders
1/183 . . . [Oval or square cylinders]

1/186 . . [for use in engines with two or more pistons reciprocating within same cylinder (such engines per se F02B 75/28)]
1/20 . . characterised by constructional features providing for lubrication
1/22 . . characterised by having ports in cylinder wall for scavenging or charging
1/24 . . Cylinder heads
2001/241 . . . [specially adapted to pent roof shape of the combustion chamber]
1/242 . . . [Arrangement of spark plugs or injectors]
1/243 . . . [Cylinder heads and inlet or exhaust manifolds integrally cast together]
2001/244 . . . [Arrangement of valve stems in cylinder heads]
2001/245 . . . [the valve stems being orientated at an angle with the cylinder axis]
2001/246 . . . [and orientated radially from the combustion chamber surface]
2001/247 . . . [the valve stems being orientated in parallel with the cylinder axis]
2001/248 . . . [Methods for avoiding thermal stress-induced cracks in the zone between valve seat openings]
2001/249 . . . [with flame plate, e.g. insert in the cylinder head used as a thermal insulation between cylinder head and combustion chamber]
1/26 . . having cooling means
1/28 . . for air cooling
1/30 . . . Finned cylinder heads
1/305 . . . . [the cylinder heads being of side valve type]
1/32 . . . . the cylinder heads being of overhead valve type
1/34 . . . . with means for directing or distributing cooling medium (F02F 1/32 takes precedence)
3/06 . . . the inserts having bimetallic effect
3/08 . . . the inserts being ring-shaped
3/10 . . . having surface coverings (F02F 3/02 takes precedence)
3/105 . . . {the coverings forming a double skirt}
3/12 . . . on piston heads
3/14 . . . within combustion chambers
3/16 . . . having cooling means
3/18 . . . the means being a liquid or solid coolant, e.g. sodium, in a closed chamber in piston
3/20 . . . the means being a fluid flowing through or along piston
3/22 . . . the fluid being liquid
3/225 . . . {the liquid being directed into blind holes}
3/24 . . . having means for guiding gases in cylinders, e.g. for guiding scavenging charge in two-stroke engines
3/26 . . . having combustion chamber in piston head (the surface thereof being covered F02F 3/14)
3/28 . . . Other pistons with specially-shaped head
3/285 . . . {the head being provided with an insert located in or on the combustion-gas-swept surface}

3/00 Piston rings, e.g. associated with piston crown {not used see F16J 9/00)

7/00 Casings, e.g. crankcases (engine casings in general F16M) {or frames}
7/0002 . . . {Cylinder arrangements}
7/0004 . . . {Crankcases of one-cylinder engines}
7/0007 . . . {Crankcases of engines with cylinders in line}
7/0009 . . . {Crankcases of opposed piston engines}
7/0012 . . . {Crankcases of V-engines}
7/0014 . . . {Crankcases of W-, deldic, or quadraic engines, or the like}
7/0017 . . . {Crankcases of radial engines}
7/0019 . . . {Cylinders and crankshaft not in one plane (deaxation)}
7/0021 . . . {Construction}
7/0024 . . . {Casings for larger engines}
7/0026 . . . {Casings for horizontal engines}
7/0029 . . . {Space-frames}
7/0031 . . . {Construction kit principle (modular engines)}
7/0034 . . . {Built from sheet material and welded casings}
7/0036 . . . {Casings for two-stroke engines with scavenging conduits}
7/0039 . . . {Casings for small engines, especially with crankcase pumps}
7/0041 . . . {Fixing Bolts}
7/0043 . . . {Arrangements of mechanical drive elements}
7/0046 . . . {Shape of casings adapted to facilitate fitting or dismantling of engine parts}
7/0048 . . . {Tunnel-type frames}
7/0051 . . . {Crankcase pump engines}
7/0053 . . . {Crankshaft bearings fitted in the crankcase}
7/0056 . . . {using bearing beams, i.e. bearings interconnected by a beam or multiple beams}
7/0058 . . . {Longitudinally or transversely separable crankcases}
7/006 . . . {Camshaft or pushrod housings (oil sumps F01M 11/0004)}
7/0063 . . . {Head bolts; Arrangements of cylinder head bolts}
7/0065 . . . {Shape of casings for other machine parts and purposes, e.g. utilisation purposes, safety}
Adaptations for other accessories

Adaptations for cooling

Adaptations for fitting the engine, e.g. front-plates or bell-housings

Front covers

Covers for belt transmissions

Sound insulation (see also F02B 77/13)

Mounting of engine casings

Materials for constructing engines or their parts

Ceramic materials

Hypereutectic aluminum, e.g. aluminum alloys with high Si content

Constructing engine casings (welded casings F02F 7/0034)

for large diesel engines

Arrangements of sealings in combustion engines
(piston rings F02F 5/00 (not used, see F16J 9/00) ; sealings per se F16J)

Involving cylinder heads

Involving cylinder liners

Involving rotary applications

Manufacturing

Riveting

Forging of engine parts

Casting (casting of pistons F02F 2003/0007)

using a lost model, e.g. foam casting

using wrought materials, e.g. wrought steels