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
   1/06 . . . [Attachment of cylinders to crankcase]
   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)
Piston heads

having means for accommodating or controlling heat expansion

having surface coverings (F02F 3/02 takes precedence)

the coversings forming a double skirt

on piston heads

within combustion chambers

having cooling means

the means being a liquid or solid coolant, e.g. sodium, in a closed chamber in piston

the means being a fluid flowing through or along piston

the fluid being liquid

the liquid being directed into blind holes

having means for guiding gases in cylinders, e.g. for guiding scavenging charge in two-stroke engines

having combustion chamber in piston head (the surface thereof being covered F02F 3/14)

Other pistons with specially-shaped head

the head being provided with an insert located in or on the combustion-gas-swept surface

Piston rings, e.g. associated with piston crown (not used see F16J 9/000)

Casings, e.g. crankcases (engine casings in general F16M) (or frames)

Cylinder arrangements

Casings of one-cylinder engines

Casings of engines with cylinders in line

Casings of opposed piston engines

Casings of V-engines

Casings of W-, deldic, or quadratic engines, or the like

Casings of radial engines

Cylinders and crankshaft not in one plane (deaxation)

Construction

Casings for larger engines

Casings for horizontal engines

Space-frames

Construction kit principle (modular engines)

Built from sheet material and welded casings

Casings for two-stroke engines with scavenging conduits

Casings for small engines, especially with crankcase pumps

Fixing Bolts

Arrangements of mechanical drive elements

Shape of casings adapted to facilitate fitting or dismantling of engine parts

Tunnel-type frames

Crankcase pump engines

Crankshaft bearings fitted in the crankcase

[using bearing beams, i.e. bearings interconnected by a beam or multiple beams]

Longitudinally or transversely separable crankcases

Camshaft or pushrod housings (oil sumps F01M 11/0004)

Head bolts; Arrangements of cylinder head bolts

Shape of casings for other machine parts and purposes, e.g. utilisation purposes, safety
7/0068  . .  {Adaptations for other accessories}
7/007  . .  {Adaptations for cooling}
7/0073  . .  {Adaptations for fitting the engine, e.g. front-plates or bell-housings}
2007/0075  . .  {Front covers}
2007/0078  . .  {Covers for belt transmissions}
7/008  . .  {Sound insulation (see also F02B 77/13)}
7/0082  .  {Mounting of engine casings}
7/0085  .  {Materials for constructing engines or their parts}
7/0087  . .  {Ceramic materials}
2007/009  . .  {Hypereutectic aluminum, e.g. aluminum alloys with high Si content}
2007/0092  . .  {Transparent materials}
7/0095  .  {Constructing engine casings (welded casings F02F 7/0034)}
2007/0097  .  {for large diesel engines}

11/00  Arrangements of sealings in combustion engines
(piston rings F02F 5/00 (not used, see F16J 9/00) ;
sealings per se F16J)
11/002  .  {involving cylinder heads}
11/005  .  {involving cylinder liners}
11/007  .  {involving rotary applications}

2200/00  Manufacturing
2200/02  .  Riveting
2200/04  .  Forging of engine parts
2200/06  .  Casting (casting of pistons F02F 2003/0007)
2200/08  .  using a lost model, e.g. foam casting
2200/11  .  using wrought materials, e.g. wrought steels