CPC  COOPERATIVE PATENT CLASSIFICATION

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

ENGINES OR PUMPS

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

F01M  LUBRICATING OF MACHINES OR ENGINES IN GENERAL; LUBRICATING INTERNAL COMBUSTION ENGINES; CRANKCASE VENTILATING

NOTE
Attention is drawn to the notes preceding class F01, specially as regards Note (3).

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.

<table>
<thead>
<tr>
<th>1/00</th>
<th>Pressure lubrication</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/02</td>
<td>using lubricating pumps (pumps in general F04: lubricating pumps per se F16N)</td>
</tr>
<tr>
<td>2001/0207</td>
<td>[characterised by the type of pump]</td>
</tr>
<tr>
<td>2001/0215</td>
<td>[Electrical pumps]</td>
</tr>
<tr>
<td>2001/0223</td>
<td>[Electromagnetic pumps]</td>
</tr>
<tr>
<td>2001/0223</td>
<td>[Rotary pumps]</td>
</tr>
<tr>
<td>2001/0246</td>
<td>[Adjustable pumps]</td>
</tr>
<tr>
<td>2001/0253</td>
<td>[characterised by the pump driving means]</td>
</tr>
<tr>
<td>2001/0261</td>
<td>[driven by the camshaft]</td>
</tr>
<tr>
<td>2001/0269</td>
<td>[driven by the crankshaft]</td>
</tr>
<tr>
<td>2001/0276</td>
<td>[driven by a balancer shaft]</td>
</tr>
<tr>
<td>2001/0284</td>
<td>[mounting of the pump]</td>
</tr>
<tr>
<td>2001/0292</td>
<td>[Sealings]</td>
</tr>
<tr>
<td>1/04</td>
<td>using pressure in working cylinder or crankcase to operate lubricant feeding devices</td>
</tr>
<tr>
<td>1/06</td>
<td>Lubricating systems characterised by the provision therein of crankshafts or connecting rods with lubricant passageways, e.g. bores (crankshafts, connecting-rods, per se F16C)</td>
</tr>
<tr>
<td>2001/062</td>
<td>[Crankshaft with passageways]</td>
</tr>
<tr>
<td>2001/064</td>
<td>[Camshaft with passageways]</td>
</tr>
<tr>
<td>2001/066</td>
<td>[Connecting rod with passageways]</td>
</tr>
<tr>
<td>2001/068</td>
<td>[Bal ance shaft with passageways]</td>
</tr>
<tr>
<td>1/08</td>
<td>Lubricating systems characterised by the provision therein of lubricant jetting means</td>
</tr>
<tr>
<td>2001/083</td>
<td>[for lubricating cylinders]</td>
</tr>
<tr>
<td>2001/086</td>
<td>[for lubricating gudgeon pins]</td>
</tr>
<tr>
<td>1/10</td>
<td>Lubricating systems characterised by the provision therein of lubricant venting or purifying means, e.g. of filters</td>
</tr>
<tr>
<td>2001/1007</td>
<td>[characterised by the purification means combined with other functions]</td>
</tr>
<tr>
<td>2001/1014</td>
<td>[comprising supply of additives]</td>
</tr>
<tr>
<td>2001/1021</td>
<td>[comprising self cleaning systems]</td>
</tr>
<tr>
<td>2001/1028</td>
<td>[characterised by the type of purification]</td>
</tr>
<tr>
<td>2001/1035</td>
<td>[comprising centrifugal filters]</td>
</tr>
<tr>
<td>2001/1042</td>
<td>[comprising magnetic parts]</td>
</tr>
</tbody>
</table>

| 2001/105       | [characterised by the layout of the purification arrangements] |
| 2001/1057      | [comprising a plurality of filters, parallel or serial]    |
| 2001/1064      | [comprising drains for oil to the carter, e.g. to recover spilled oil during change of filters] |
| 2001/1071      | [comprising oil tanks]                                   |
| 2001/1078      | [comprising an oil pick-up tube to oil pump, e.g. strainer] |
| 2001/1085      | [comprising non-return valves]                           |
| 2001/1092      | [comprising valves bypassing the filter]                 |
| 1/12           | Closed-circuit lubricating systems not provided for in groups F01M 1/02 - F01M 1/10 |
| 2001/123       | [using two or more pumps]                                |
| 2001/126       | [Dry-sumps]                                              |
| 1/14           | Timed lubrication (F01M 1/08 takes precedence)            |
| 1/16           | Controlling lubricant pressure or quantity (rendering machines or engines inoperative or idling on lubricant pressure failure F01M 1/22) |
| 2001/165       | [according to fuel dilution in oil]                       |
| 1/18           | Indicating or safety devices (concerning lubricant level F01M 11/06, F01M 11/12) |
| 1/20           | concerning lubricant pressure                            |
| 1/22           | rendering machines or engines inoperative or idling on pressure failure |
| 1/24           | acting on engine fuel system                             |
| 1/26           | acting on engine ignition system                         |
| 1/28           | acting on engine combustion-air supply                   |
| 3/00           | Lubrication specially adapted for engines with crankcase compression of fuel-air mixture or for other engines in which lubricant is contained in fuel, combustion air, or fuel-air mixture (separating lubricant from air or fuel-air mixture before entry into cylinder F01M 11/08) |
| 3/02           | with variable proportion of lubricant to fuel, lubricant to air, or lubricant to fuel-air-mixture |
| 3/04           | for upper cylinder lubrication only                      |
5/00 Heating, cooling, or controlling temperature of lubricant (arrangement of lubricant coolers in engine cooling system F01P 11/08); Lubrication means facilitating engine starting

5/001 . [Heating]
5/002 . [Cooling]

2005/004 . . . [Oil-cooled engines]
5/005 . [Controlling temperature of lubricant]
5/007 . [Thermostatic control]

2005/008 . . . [Lubrication means facilitating engine starting]
5/02 . Conditioning lubricant for aiding engine starting, e.g. heating
5/021 . . . [by heating]

2005/023 . . . [Oil sump with partition for facilitating heating of oil during starting]
5/025 . . . [by prelubricating, e.g. using an accumulator]
2005/026 . . . [with an auxiliary pump]
2005/028 . . . [with a reservoir under pressure]
5/04 . . . Diluting, e.g. with fuel

7/00 Lubrication means specially adapted for machine or engine running-in

9/00 Lubrication means having pertinent characteristics not provided for in, or of interest apart from, groups F01M 1/00 - F01M 7/00

9/02 . having means for introducing additives to lubricant
9/04 . Use of fuel as lubricant
9/06 . Dip or splash lubrication
9/08 . Drip lubrication
9/10 . Lubrication of valve gear or auxiliaries
9/101 . . . [of cam surfaces]
9/102 . . . [of camshaft bearings]
9/103 . . . [of valve stem and guide]
9/104 . . . [of tappets]
9/105 . . . [using distribution conduits]
9/106 . . . [Oil reservoirs]
9/107 . . . [of rocker shaft bearings]
9/108 . . . [of auxiliaries]
9/109 . . . [of rotary slide or sleeve valves]
9/12 . Non-pressure lubrication, or non-closed-circuit lubrication, not otherwise provided for

11/00 Component parts, details or accessories, not provided for in, or of interest apart from, groups F01M 1/00 - F01M 9/00

11/004 . . . [Oilsumps]
2011/0008 . . . [with means for reducing vibrations]
2011/0012 . . . [with acoustic insulation]
2011/0016 . . . [with thermic insulation]
2011/002 . . . [with means for improving the stiffness]
2011/0025 . . . [with heat exchangers]
2011/0029 . . . [with oil filters]
2011/0033 . . . [with special means for guiding the return of oil into the sump]
2011/0037 . . . [with different oil compartments]
2011/0041 . . . [for accommodating movement or position of engines]
2011/0045 . . . [for controlling the oil temperature]
2011/005 . [with special anti-turbulence means, e.g. anti-foaming means or intermediate plates]
2011/0054 . . . [Fastening to the cylinder block]
2011/0058 . . . [Fastening to the transmission]
2011/0062 . . . [Gaskets]

2011/0066 . . . [with passages in the wall, e.g. for axles or fluid passages]
2011/007 . . . [Oil pickup tube to oil pump, e.g. strainer]
2011/0075 . . . [with a plurality of tubes]
2011/0079 . . . [with the oil pump integrated or fixed to sump]
2011/0083 . . . [Dry sumps]
2011/0087 . . . [Sump being made of different parts]
2011/0091 . . . [characterised by used materials]
2011/0095 . . . [Supplementary oil tank]
11/02 . Arrangements of lubricant conduits

2011/021 . . . [for lubricating auxiliaries, e.g. pumps or turbo chargers]
2011/022 . . . [for lubricating cylinders]
2011/023 . . . [between oil sump and cylinder head]
2011/025 . . . [for lubricating gudgeon pins]
2011/026 . . . [for lubricating crankshaft bearings]
2011/027 . . . [for lubricating connecting rod bearings]
2011/028 . . . [for lubricating balance shafts]
11/03 . Mounting or connecting of lubricant purifying means relative to the machine or engine; Details of lubricant purifying means (filters B01D)

2011/031 . . . [characterised by mounting means]
2011/033 . . . [comprising coolers or heat exchangers]
2011/035 . . . [comprising oil pumps]
2011/036 . . . [comprising pumps for the cooling circuit]
2011/038 . . . [comprising lubricant-air separators]
11/04 . Filling or draining lubricant of or from machines or engines

2011/0408 . . . [Sump drainage devices, e.g. valves, plugs]
2011/0416 . . . [Plugs]
2011/0425 . . . [with a device facilitating the change of oil]
2011/0433 . . . [with a device defining the lubricant level during filling]
2011/0441 . . . [for measuring the lubricant level]
11/045 . . . [Removing lubricant by suction]
11/0458 . . . [Lubricant filling and draining]
2011/0466 . . . [Filling or draining during running]
2011/0475 . . . [with combustion of used lubricant in the engine]
2011/0483 . . . [with a lubricant cartridge for facilitating the change]

2011/0491 . . . [Filling cap with special features]
11/06 . Means for keeping lubricant level constant or for accommodating movement or position of machines or engines

11/061 . . . [Means for keeping lubricant level constant]
11/062 . . . [Accommodating movement or position of machines or engines, e.g. dry sumps]
11/064 . . . [Movement]
11/065 . . . [Position]
11/067 . . . [inverted, e.g. for inverted flight]
2011/068 . . . [with internal reservoir]
11/08 . Separating lubricant from air or fuel-air mixture before entry into cylinder (separating in general B01D)

11/10 . Indicating devices; Other safety devices
11/12 . concerning lubricant level
2011/14 . . . [for indicating the necessity to change the oil]
2011/1406 . . . [by considering acidity]
2011/1413 . . . [by considering dielectric properties]
2011/142 . . . [by considering speed, e.g. revolutions per minute [RPM]]
by considering distance
by considering load
by considering magnetic properties of the oil
by considering oil pressure
by considering oil quantity
by considering moisture level
by considering quantity of soot
by considering temperature
by considering viscosity
by considering duration of operation
by considering total base number [TBN]

13/00 Crankcase ventilating or breathing

[with systems regulating the pressure in the carter]
[Breather valves]
[with a membrane]
[electromagnetic]
[with a de-icing or defrosting system]
[Breather inlet-air filters]
[Layout of crankcase breathing systems]
[with one or more valves]
[having one or more deoilers]
[with a by-pass]
[having a plurality of deoilers]
[in parallel]
[in series]
[Engine parameters used for crankcase breather systems]
[Crankcase pressure]
[Rotation speed]
[Engine load]
[of negative pressure]
[using engine inlet suction]
[Control valves in suction conduit]
[with an inlet-conduit via an air-filter]
[with pumps sucking air or blow-by gases from the crankcase]
[with a turbo charger or compressor]
[of positive pressure]
[having means for purifying air before leaving crankcase, e.g. removing oil]
[arranged in covering members apertures, e.g. caps]
[using cooling means]
[arranged in valve-covers]
[Separating oil and gas with a centrifuge device]
[the centrifuge device having no rotating part, e.g. cyclone]
[with a deflection device, e.g. screen]
[with a filter]
[with means for accommodating movement or position of engines]
[using compression or decompression of the gas]
[with a de-icing or defrosting system (for breathing valves F01M 2013/0027)]
[with a labyrinth]
[with electrostatic means]
[using heating means]
[by separating water or moisture]
[using catalysis]