

CPC COOPERATIVE PATENT CLASSIFICATION

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

ENGINES OR PUMPS

F01 MACHINES OR ENGINES IN GENERAL (combustion engines [F02](#); machines for liquids [F03](#), [F04](#)); 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.

1/00	Pressure lubrication	2001/105	. . {characterised by the layout of the purification arrangements}
1/02	. using lubricating pumps (pumps in general F04 ; lubricating pumps per se F16N)	2001/1057	. . . {comprising a plurality of filters, parallel or serial}
2001/0207	. . {characterised by the type of pump}	2001/1064	. . . {comprising drains for oil to the carter, e.g. to recover spilled oil during change of filters}
2001/0215	. . . {Electrical pumps}	2001/1071	. . . {comprising oil tanks}
2001/0223	. . . {Electromagnetic pumps}	2001/1078	. . . {comprising an oil pick-up tube to oil pump, e.g. strainer}
2001/023	. . . {Piston pumps}	2001/1085	. . . {comprising non-return valves}
2001/0238	. . . {Rotary pumps}	2001/1092	. . . {comprising valves bypassing the filter}
2001/0246	. . . {Adjustable pumps}	1/12	. Closed-circuit lubricating systems not provided for in groups F01M 1/02 - F01M 1/10
2001/0253	. . {characterised by the pump driving means}	2001/123	. . {using two or more pumps}
2001/0261	. . . {driven by the camshaft}	2001/126	. . {Dry-sumps}
2001/0269	. . . {driven by the crankshaft}	1/14	. Timed lubrication (F01M 1/08 takes precedence)
2001/0276	. . . {driven by a balancer shaft}	1/16	. Controlling lubricant pressure or quantity (rendering machines or engines inoperative or idling on lubricant pressure failure F01M 1/22)
2001/0284	. . {mounting of the pump}	2001/165	. . {according to fuel dilution in oil}
2001/0292	. . {Sealings}	1/18	. Indicating or safety devices (concerning lubricant level F01M 11/06 , F01M 11/12)
1/04	. using pressure in working cylinder or crankcase to operate lubricant feeding devices	1/20	. . concerning lubricant pressure
1/06	. Lubricating systems characterised by the provision therein of crankshafts or connecting rods with lubricant passageways, e.g. bores (crankshafts, connecting-rods, per se F16C)	1/22	. . . rendering machines or engines inoperative or idling on pressure failure
2001/062	. . {Crankshaft with passageways}	1/24 acting on engine fuel system
2001/064	. . {Camshaft with passageways}	1/26 acting on engine ignition system
2001/066	. . {Connecting rod with passageways}	1/28 acting on engine combustion-air supply
2001/068	. . {Balanced shaft with passageways}	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)
1/08	. Lubricating systems characterised by the provision therein of lubricant jetting means	3/02	. with variable proportion of lubricant to fuel, lubricant to air, or lubricant to fuel-air-mixture
2001/083	. . {for lubricating cylinders}	3/04	. for upper cylinder lubrication only
2001/086	. . {for lubricating gudgeon pins}		
1/10	. Lubricating systems characterised by the provision therein of lubricant venting or purifying means, e.g. of filters		
2001/1007	. . {characterised by the purification means combined with other functions}		
2001/1014	. . . {comprising supply of additives}		
2001/1021	. . . {comprising self cleaning systems}		
2001/1028	. . {characterised by the type of purification}		
2001/1035	. . . {comprising centrifugal filters}		
2001/1042	. . . {comprising magnetic parts}		

- 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-pressurised 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](#)**
- 11/0004 . {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 turbochargers}
 - 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
 - 11/0408 . . {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 . . {Filing 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]}

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- 2011/1426 . . . {by considering distance}
- 2011/1433 . . . {by considering load}
- 2011/144 . . . {by considering magnetic properties of the oil}
- 2011/1446 . . . {by considering pressure}
- 2011/1453 . . . {by considering oil quantity}
- 2011/146 . . . {by considering moisture level}
- 2011/1466 . . . {by considering quantity of soot}
- 2011/1473 . . . {by considering temperature}
- 2011/148 . . . {by considering viscosity}
- 2011/1486 . . . {by considering duration of operation}
- 2011/1493 . . . {by considering total base number [TBN]}

13/00 Crankcase ventilating or breathing

- 2013/0005 . {with systems regulating the pressure in the carter}
- 13/0011 . {Breather valves}
- 2013/0016 . . {with a membrane}
- 2013/0022 . . {electromagnetic}
- 2013/0027 . . {with a de-icing or defrosting system}
- 13/0033 . {Breather inlet-air filters}
- 2013/0038 . {Layout of crankcase breathing systems}
- 2013/0044 . . {with one or more valves}
- 2013/005 . . {having one or more deoilers}
- 2013/0055 . . . {with a by-pass}
- 2013/0061 . . . {having a plurality of deoilers}
- 2013/0066 {in parallel}
- 2013/0072 {in series}
- 2013/0077 . {Engine parameters used for crankcase breather systems}
- 2013/0083 . . {Crankcase pressure}
- 2013/0088 . . {Rotation speed}
- 2013/0094 . . {Engine load}
- 13/02 . by means of additional source of positive or negative pressure
- 13/021 . . {of negative pressure}
- 13/022 . . . {using engine inlet suction}
- 13/023 {Control valves in suction conduit}
- 13/025 {with an inlet-conduit via an air-filter}
- 2013/026 . . . {with pumps sucking air or blow-by gases from the crankcase}
- 2013/027 . . . {with a turbo charger or compressor}
- 13/028 . . {of positive pressure}
- 13/04 . having means for purifying air before leaving crankcase, e.g. removing oil
- 13/0405 . . {arranged in covering members apertures, e.g. caps}
- 2013/0411 . . {using cooling means}
- 13/0416 . . {arranged in valve-covers}
- 2013/0422 . . {Separating oil and gas with a centrifuge device}
- 2013/0427 . . . {the centrifuge device having no rotating part, e.g. cyclone}
- 2013/0433 . . {with a deflection device, e.g. screen}
- 2013/0438 . . {with a filter}
- 2013/0444 . . {with means for accommodating movement or position of engines}
- 2013/045 . . {using compression or decompression of the gas}
- 2013/0455 . . {with a de-icing or defrosting system (for breathing valves F01M 2013/0027)}
- 2013/0461 . . {with a labyrinth}
- 2013/0466 . . {with electrostatic means}
- 2013/0472 . . {using heating means}
- 2013/0477 . . {by separating water or moisture}
- 2013/0483 . . {using catalysis}

- 2013/0488 . . {with oil trap in the return conduit to the crankcase}
- 2013/0494 . . . {using check valves}
- 13/06 . specially adapted for submersible engines, e.g. of armoured vehicles

2250/00 Measuring

- 2250/60 . Operating parameters
- 2250/62 . Load
- 2250/64 . Number of revolutions
- 2250/66 . Vehicle speed