

CPC COOPERATIVE PATENT CLASSIFICATION

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

ENGINEERING IN GENERAL

F16 ENGINEERING ELEMENTS AND UNITS; GENERAL MEASURES FOR PRODUCING AND MAINTAINING EFFECTIVE FUNCTIONING OF MACHINES OR INSTALLATIONS; THERMAL INSULATION IN GENERAL

F16N LUBRICATING

NOTE

Attention is drawn to the following places:

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| A01D 69/12 | Lubrication of harvesters; |
| B21J 3/00 | Lubricating during forging or pressing; |
| B25D 17/26 | Lubricating of portable power-driven percussive tools; |
| B60R 17/00 | Arrangements or adaptations of lubricating; systems or devices in vehicles; |
| B61C 17/08 | Lubrication systems for railway locomotives; |
| B62D 55/092 | Vehicle endless-track units with lubrication means; |
| D04B 35/28 | Devices for lubricating knitting machine parts; |
| E05B 17/08 | Lubricating devices for locks; |
| E05D 11/02 | Lubricating arrangements for hinges; |
| E21B 10/22 | Lubricating details of roller drill bits for earth; drilling. |

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.

Lubrication devices or arrangements for oil or grease

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| 1/00 | Constructional modifications of parts of machines or apparatus for the purpose of lubrication | 7/14 | • the lubricant being conveyed from the reservoir by mechanical means (by pumping devices F16N 7/36 , F16N 7/38 ; adaptations for lubrication of machines or engines in general, of internal-combustion engines F01M) |
| 3/00 | Devices for supplying lubricant by manual action (draining equipment for liquid containers B65D) | 7/16 | • . . the oil being carried up by a lifting device (scoop devices in general F04D) |
| 3/02 | • delivering oil | 7/18 | • . . . with one or more feed members fixed on a shaft |
| 3/04 | • . Oil cans; Oil syringes | 7/20 | • . . . with one or more members moving around the shaft to be lubricated |
| 3/06 | • . . delivering on squeezing | 7/22 | • shaped as rings |
| 3/08 | • . . incorporating a piston-pump | 7/24 | • . . . with discs, rollers, belts or the like contacting the shaft to be lubricated |
| 3/10 | • delivering grease | 7/26 | • . . Splash lubrication (mist lubrication F16N 7/32) |
| 3/12 | • . Grease guns | 7/28 | • . Dip lubrication |
| 5/00 | Apparatus with hand-positioned nozzle supplied with lubricant under pressure (F16N 3/00 takes precedence) | 7/30 | • the oil being fed or carried along by another fluid (in internal-combustion engines F02F) |
| 5/02 | • Nozzles or nozzle-valve arrangements therefor, e.g. high-pressure grease guns | 7/32 | • . Mist lubrication (splash lubrication F16N 7/26) |
| 7/00 | Arrangements for supplying oil or unspecified lubricant from a stationary reservoir or the equivalent in or on the machine or member to be lubricated | 7/34 | • . . Atomising devices for oil (atomising devices in general B05B) |
| 7/02 | • with gravity feed or drip lubrication | 7/36 | • with feed by pumping action of the member to be lubricated or of a shaft of the machine; Centrifugal lubrication |
| 7/04 | • . with oil flow promoted by vibration | 7/363 | • . {Centrifugal lubrication} |
| 7/06 | • . Arrangements in which the droplets are visible | 7/366 | • . {with feed by pumping action of a vertical shaft of the machine} |
| 7/08 | • . controlled by means of the temperature of the member to be lubricated (thermostats G05D) | 7/38 | • with a separate pump; Central lubrication systems |
| 7/10 | • . incorporating manually-operated control means, e.g. spindles | 7/385 | • . {Central lubrication systems} |
| 7/12 | • with feed by capillary action, e.g. by wicks | 7/40 | • . in a closed circulation system |

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| 9/00 | Arrangements for supplying oil or unspecified lubricant from a moving reservoir or the equivalent (also usable with a stationary reservoir F16N 7/00) | | |
| 9/02 | . with reservoir on or in a rotary member | | |
| 9/04 | . with reservoir on or in a reciprocating, rocking, or swinging member | | |
| 11/00 | Arrangements for supplying grease from a stationary reservoir or the equivalent in or on the machine or member to be lubricated; Grease cups | | |
| 11/02 | . Hand-actuated grease cups, e.g. Stauffer cups | | |
| 11/04 | . Spring-loaded devices | | |
| 11/06 | . Weight-loaded devices | | |
| 11/08 | . with mechanical drive, other than directly by springs or weights (lubricating-pumps F16N 13/00) | | |
| 11/10 | . by pressure of another fluid | | |
| 11/12 | . by centrifugal action | | |
| 13/00 | Lubricating-pumps (oil cans with pump F16N 3/08; pumps for liquids in general F04) | | |
| 2013/003 | . {Flexible-wall pumps} | | |
| 2013/006 | . {Jet pumps} | | |
| 13/02 | . with reciprocating piston (pumps with distributing equipment F16N 13/22) | | |
| 13/04 | . . Adjustable reciprocating pumps | | |
| 13/06 | . . Actuation of lubricating-pumps | | |
| 2013/063 | . . . {with electrical drive} | | |
| 2013/066 | . . . {with electromagnetical drive} | | |
| 13/08 | . . . by hand {or foot} | | |
| 13/10 | . . . with mechanical drive (F16N 13/18 takes precedence) | | |
| 13/12 | with ratchet | | |
| 13/14 | with cam or wobble-plate on shaft parallel to the pump cylinder or cylinders | | |
| 13/16 | . . . with fluid drive | | |
| 13/18 | . . . relative movement of pump parts being produced by inertia of one of the parts or of a driving member | | |
| 13/20 | . Rotary pumps (with distributing equipment F16N 13/22) | | |
| 2013/205 | . . {Screw pumps} | | |
| 13/22 | . with distributing equipment (separate distributing equipment F16N 25/00) | | |
| 15/00 | Lubrication with substances other than oil or grease; Lubrication characterised by the use of particular lubricants in particular apparatus or conditions (F16N 17/00 takes precedence; lubricating compositions, selection of particular substances as lubricants in general C10M) | | |
| 15/02 | . with graphite or graphite-containing compositions | | |
| 15/04 | . with water (bearings working in water F16C) | | |
| 17/00 | Lubrication of machines or apparatus working under extreme conditions (additives to lubricating oil or lubricating grease C10M) | | |
| 17/02 | . at high temperature (of turbines F01D , F02C ; lubrication of machines or engines in general, of internal-combustion engines F01M) | | |
| 17/04 | . at low temperature (lubrication of refrigerating machines F25B) | | |
| 17/06 | . in vacuum or under reduced pressure (lubrication of evacuating pumps F04 ; of rotary anodes of X-ray tubes H01J 35/10) | | |
| | | <u>Details of lubricators or lubrication systems</u> | |
| | | 19/00 | Lubricant containers for use in lubricators or lubrication systems |
| | | 19/003 | . {Indicating oil level (measuring liquid level in general G01F)} |
| | | 19/006 | . {Maintaining oil level (level control in general G05D 9/00)} |
| | | 21/00 | Conduits; Junctions (in general F16L); Fittings for lubrication apertures |
| | | 2021/005 | . {Modular units} |
| | | 21/02 | . Lubricating nipples |
| | | 21/04 | . Nozzles for connection of lubricating equipment to nipples |
| | | 21/06 | . Covering members for nipples, conduits or apertures |
| | | 23/00 | Special adaptations of check valves (check valves in general F16K) |
| | | 25/00 | Distributing equipment {with or without proportioning devices} |
| | | 25/02 | . with reciprocating distributing slide valve |
| | | 25/04 | . with rotary distributing member (combined with oil pump F16N 13/22) |
| | | 27/00 | Proportioning devices (liquid meters G01F) |
| | | 27/005 | . {using restrictions} |
| | | 27/02 | . Gating equipment (multiple-way valves F16K ; metering cocks G01F) |
| | | 29/00 | Special means in lubricating arrangements or systems providing for the indication or detection of undesired conditions; Use of devices responsive to conditions in lubricating arrangements or systems |
| | | 29/02 | . for influencing the supply of lubricant |
| | | 29/04 | . enabling a warning to be given; enabling moving parts to be stopped |
| | | 31/00 | Means for collecting, retaining, or draining-off lubricant in or on machines or apparatus (oil separators for separating oil from exhaust steam F22G) |
| | | 31/002 | . {Drain pans} |
| | | 31/004 | . . {combined with container} |
| | | 31/006 | . {Drip trays} |
| | | 2031/008 | . {Drain plugs} |
| | | 31/02 | . Oil catchers; Oil wipers (oil-scraping rings for pistons F16J 9/20 {; cleaning means for indicating or measuring dip members, e.g. dipstick wipers G01F 23/045 }) |
| | | 2031/025 | . . {Oil-slinger} |
| | | 33/00 | Mechanical arrangements for cleaning lubricating equipment; Special racks or the like for use in draining lubricant from machine parts |
| | | 2033/005 | . {Flushing} |
| | | | <u>Care of lubricants</u> |
| | | 35/00 | Storage of lubricants in engine-rooms or the like (storage containers B65) |
| | | 37/00 | Equipment for transferring lubricant from one container to another |
| | | 37/003 | . {for filling bearings} |
| | | 2037/006 | . {Filling} |
| | | 37/02 | . for filling grease guns |

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| 39/00 | Arrangements for conditioning of lubricants in the lubricating system (cleaning of lubricating oil, lubricating compositions C10M) |
| 39/002 | . {by deaeration (degasification of liquids B01D 19/00)} |
| 39/005 | . {by evaporating or purifying (for heating or cooling of filters B01D 35/18 , e.g. comprising a vaporising unit B01D 35/185)} |
| 2039/007 | . {Using strainers} |
| 39/02 | . by cooling (heat-exchangers in general F28) |
| 39/04 | . by heating (heat-exchangers in general F28) |
| 39/06 | . by filtration (filters in general B01D ; magnetic separators B03C 1/00 ; {centrifugal separators or filters B04B 5/005 }) |
| 2039/065 | . . {inlet foot filter} |
| 39/08 | . by diluting, e.g. by addition of fuel (lubrication of machines or engines in general, of internal-combustion engines F01M) |
| 99/00 | Subject matter not provided for in other groups of this subclass |

2200/00 Condition of lubricant

| | |
|---------|-----------------------------------|
| 2200/02 | . Oxidation |
| 2200/04 | . Detecting debris, chips, swarfs |
| 2200/06 | . Film thickness |
| 2200/08 | . Acidity, pH-value |
| 2200/10 | . Temperature |
| 2200/12 | . Viscosity |
| 2200/14 | . Treating with electricity |
| 2200/16 | . using tracers |
| 2200/18 | . Detecting foaming |
| 2200/20 | . Detecting water |

Care of lubricants**2210/00 Applications**

| | |
|----------|-------------------------|
| 2210/02 | . Turbines |
| 2210/025 | . . Wind Turbines |
| 2210/04 | . Vehicles |
| 2210/06 | . Marine |
| 2210/08 | . Aircraft |
| 2210/09 | . . for inverted flight |
| 2210/10 | . Refrigerators |
| 2210/12 | . Gearings |
| 2210/14 | . Bearings |
| 2210/16 | . Pumps |
| 2210/18 | . Electric motors |
| 2210/20 | . Electric generators |
| 2210/22 | . Centrifuges |
| 2210/24 | . Conveyors |
| 2210/26 | . Spinning spindles |
| 2210/28 | . submerged |
| 2210/30 | . for reversed rotation |
| 2210/32 | . Sewing machines |
| 2210/33 | . Chains |
| 2210/34 | . Cables and wires |

2230/00 Signal processing

| | |
|---------|---------------------------------|
| 2230/02 | . Microprocessor; Microcomputer |
| 2230/06 | . using mapping techniques |
| 2230/10 | . Timing network |

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|----------------|-------------------------------------|
| 2230/12 | . . with pneumatic elements |
| 2230/13 | . . with hydraulic elements |
| 2230/14 | . . with bimetallic elements |
| 2230/16 | . . with capacitors |
| 2230/18 | . Switches |
| 2230/19 | . . Photo sensor |
| 2230/20 | . . Reed relays |
| 2230/22 | . using counters |
| 2250/00 | Measuring |
| 2250/04 | . Pressure |
| 2250/05 | . . Atmospheric pressure |
| 2250/06 | . . for determining flow |
| 2250/08 | . Temperature |
| 2250/11 | . . Ambient temperature |
| 2250/16 | . Number of revolutions, RPM |
| 2250/18 | . Level |
| 2250/30 | . Dielectricum |
| 2250/32 | . Inductive |
| 2250/34 | . Transparency; Light; Photo sensor |
| 2250/36 | . Viscosity |
| 2250/38 | . Piezo; x-tal |
| 2250/40 | . Flow |
| 2250/42 | . Friction |
| 2250/50 | . Sampling |
| 2250/52 | . . magnetic |

2260/00 Fail safe

| | |
|----------|----------------------------------|
| 2260/02 | . Indicating |
| 2260/04 | . . Oil level |
| 2260/05 | . . Oil flow |
| 2260/06 | . . Temperature |
| 2260/065 | . . . by means of colours or dye |
| 2260/08 | . . Pressure |
| 2260/12 | . . using warning lamps |
| 2260/14 | . . using sound |
| 2260/16 | . . using recording |
| 2260/18 | . . necessity of changing oil |
| 2260/20 | . Emergency |
| 2260/21 | . . limping home |
| 2260/22 | . . Rupture |
| 2260/24 | . . using accumulator |
| 2260/30 | . Clogging filter |
| 2260/32 | . Pump failure |
| 2260/40 | . Pre-lubrication |
| 2260/50 | . After-lubrication |
| 2260/60 | . Limping home |

2270/00 Controlling

| | |
|---------|---|
| 2270/10 | . Level |
| 2270/12 | . . using overflow (F16N 2270/18 takes precedence) |
| 2270/14 | . . using float device |
| 2270/18 | . . using overflow by filling |
| 2270/20 | . Amount of lubricant |
| 2270/22 | . . with restrictions |
| 2270/24 | . . . using porous, felt, ceramic, or sintered material |
| 2270/26 | . . . variable |
| 2270/30 | . . intermittent |
| 2270/32 | . . . Fixed pulse, fixed length, fixed amplitude |
| 2270/48 | . . . pressure-controlled |
| 2270/50 | . Condition |
| 2270/52 | . . Viscosity |
| 2270/54 | . . pH; Acidity |

- 2270/56 . . Temperature
- 2270/60 . Pressure
- 2270/62 . . Limit
- 2270/64 . . Set-pressure
- 2270/70 . Supply
- 2270/72 . . on-off
- 2270/74 . . . only during use

2280/00 Valves

- 2280/02 . electromagnetically operated
- 2280/04 . Variable-flow or proportional valves