F01C COOPERATIVE PATENT CLASSIFICATION

ENGINE OR PUMPS

F01M MACHINES OR ENGINES IN GENERAL; ENGINE PLANTS IN GENERAL; STEAM ENGINES

F01C ROTARY-PISTON OR OSCILLATING-PISTON MACHINES OR ENGINES (internal-combustion aspects F02B 53/00, F02B 55/00)

NOTES

1. This subclass covers:
   - rotary-piston or oscillating-piston engines for elastic fluids, e.g. steam;
   - rotary-piston or oscillating-piston engines for liquids and elastic fluids;
   - rotary-piston or oscillating-piston machines for elastic fluids;
   - rotary-piston or oscillating-piston machines for liquids and elastic fluids.

2. In this subclass, the following expression is used with the meaning indicated:
   - "rotary-piston machine" includes the German expressions "Drehkolbenmaschinen", "Kreiskolbenmaschinen" and "Umlaufkolbenmaschinen".

3. Attention is drawn to the Notes preceding class F01, especially as regards the definitions of "rotary-piston machine", "oscillating-piston machine", "rotary piston", "co-operating members", "movement of co-operating members", "teeth or tooth-equivalents" and "internal-axis".

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 Rotary-piston machines or engines (with axes of co-operating members non parallel F01C 3/00; with the working-chamber walls at least partly resiliently deformable F01C 5/00; with fluid ring or the like F01C 7/00; rotary-piston machines or engines in which the working fluid is exclusively displaced by, or exclusively displaces, one or more reciprocating pistons F01B 13/00)

NOTE

Group F01C 1/30 takes precedence over groups F01C 1/02 - F01C 1/28.

1/02 . of arcuate-engagement type, i.e. with circular translatory movement of co-operating members, each member having the same number of teeth or tooth-equivalents

1/0207 . . . [both members having co-operating elements in spiral form]

1/0215 . . . [where only one member is moving]

1/0223 . . . . [with symmetrical double wraps]

1/023 . . . . [where both members are moving]

1/0238 . . . . [with symmetrical double wraps]

1/0246 . . . . [Details concerning the involute wraps or their base, e.g. geometry]

1/0253 . . . . [Details concerning the base]

1/0261 . . . . . [Details of the ports, e.g. location, number, geometry]

1/0269 . . . . . [Details concerning the involute wraps]

1/0276 . . . . . [Different wall heights]

1/0284 . . . . . [Details of the wrap tips]

1/0292 . . . . . [Ports or channels located in the wrap]

1/04 . . . . . . . [of internal-axis type]

1/045 . . . . . . . . [having a C-shaped piston]

1/06 . . . . . . . . . . . [of other than internal-axis type (F01C 1/063 takes precedence)]

1/063 . . . . . . . . . . . . [with coaxially-mounted members having continuously-changing circumferential spacing between them]

1/067 . . . . . . . . . . . . [having cam-and-follower type drive]

1/07 . . . . . . . . . . . . [having crankshaft-and-connecting-rod type drive]

1/073 . . . . . . . . . . . . [having pawl-and-ratchet type drive]

1/077 . . . . . . . . . . . . [having toothed-gearing type drive]

1/08 . . . . . . . . . . . . . [of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing]

1/082 . . . . . . . . . . . . [Details specially related to intermeshing engagement type machines or engines]

1/084 . . . . . . . . . . . . [Toothed wheels]

1/086 . . . . . . . . . . . . [Carter]

1/088 . . . . . . . . . . . . [Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement]

1/10 . . . . . . . . . . . . . . . . . [of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member]

1/101 . . . . . . . . . . . . . . . . . . [Moineau-type]

1/102 . . . . . . . . . . . . . . . . . . [with a crescent shaped filler element located between the intermeshing elements]
movement between co-operating members of one of these groups together with some other type of movement or having the characteristics covered by F01C 1/02, F01C 1/08, F01C 1/22, F01C 1/24 or having both the movements defined in sub-groups F01C 1/02 and F01C 1/24 or having the characteristics covered by one of these groups together with some other type of movement between co-operating members

1/103 . . . [the two members rotating simultaneously around their respective axes]
1/104 . . . [one member having simultaneously a rotational movement about its own axis and an orbital movement]
1/105 . . . [and having an articulated driving shaft]
1/107 . . . with helical teeth
1/113 . . . the inner member carrying rollers intermeshing with the outer member
1/12 . . . of other than internal-axis type
1/123 . . . [with tooth-like elements, extending generally radially from the rotor body cooperating with recesses in the other rotor, e.g. one tooth]
1/126 . . . [with elements extending radially from the rotor body not necessarily cooperating with corresponding recesses in the other rotor, e.g. lobes, Roots type]
1/14 . . . with toothed rotary pistons
1/16 . . . with helical teeth, e.g. chevron-shaped, screw type \( \{ \) for non-parallel axes of movement F01C 3/00 \( \} \)
1/165 . . . [having more than two rotary pistons with parallel axes]
1/18 . . . with similar tooth forms (F01C 1/16 takes precedence)
1/20 . . . with dissimilar tooth forms (F01C 1/16 takes precedence)
1/22 . . . of internal-axis type with equidirectional movement of co-operating members at the points of engagement, or with one of the co-operating members being stationary, the inner member having more teeth or tooth- equivalents than the outer member
1/24 . . . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions
1/26 . . . of internal-axis type
1/28 . . . of other than internal-axis type
1/30 . . . having the characteristics covered by two or more groups F01C 1/02, F01C 1/08, F01C 1/22, F01C 1/24 or having the characteristics covered by one of these groups together with some other type of movement between co-operating members
1/32 . . . having both the movement defined in group F01C 1/02 and relative reciprocation between the co-operating members
1/321 . . . [with vanes hinged to the inner member and reciprocating with respect to the inner member]
1/322 . . . [with vanes hinged to the outer member and reciprocating with respect to the outer member]
1/324 . . . with vanes hinged to the inner member and reciprocating with respect to the outer member
1/328 . . . and hinged to the outer member
1/332 . . . with vanes hinged to the outer member and reciprocating with respect to the inner member
1/336 . . . and hinged to the inner member
1/34 . . . having the movement defined in group F01C 1/08 or F01C 1/22 and relative reciprocation between the co-operating members
1/344 . . . with vanes reciprocating with respect to the inner member
1/3441 . . . [the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation]
1/3442 . . . [the surfaces of the inner and outer member, forming the working space, being surfaces of revolution]
1/3443 . . . [with a separation element located between the inlet and outlet opening]
1/3445 . . . [the vanes having the form of rollers, slippers or the like]
1/3446 . . . [the inner and outer member being in contact along more than one line or surface]
1/3447 . . . [the vanes having the form of rollers, slippers or the like]
1/3448 . . . [with axially movable vanes]
1/348 . . . the vanes positively engaging, with circumferential play, an outer rotatable member
1/352 . . . the vanes being pivoted on the axis of the outer member
1/356 . . . with vanes reciprocating with respect to the outer member
1/3562 . . . [the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation]
1/3564 . . . [the surfaces of the inner and outer member, forming the working space, being surfaces of revolution]
1/3566 . . . [the inner and outer member being in contact along more than one line or surface]
1/3568 . . . [with axially movable vanes]
1/36 . . . having both the movements defined in sub-groups F01C 1/22 and F01C 1/24
1/38 . . . having the movement defined in group F01C 1/02 and having a hinged member (F01C 1/32 takes precedence)
1/39 . . . with vanes hinged to the inner as well as to the outer member
1/40 . . . having the movement defined in group F01C 1/08 or F01C 1/22 and having a hinged member
1/44 . . . with vanes hinged to the inner member
1/46 . . . with vanes hinged to the outer member

3/00 Rotary-piston machines or engines with non-parallel axes of movement of co-operating members \( \{ \) with the working-chamber walls being at least partly resiliently deformable F01C 5/00 \( \} \)
3/02 . . . the axes being arranged at an angle of 90 degrees
3/025 . . . [of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing]
3/04 . . . with axially sliding vanes
3/06 . . . the axes being arranged otherwise than at an angle of 90 degrees
3/08 . . . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing
3/085 . . . [the axes of cooperating members being on the same plane]

5/00 Rotary-piston machines or engines with the working-chamber walls at least partly resiliently deformable
5/02 . . . the resiliently-deformable wall being part of the inner member, e.g. of a rotary piston
5/04 . . . the resiliently-deformable wall being part of the outer member, e.g. of a housing
Sealing arrangements in rotary-piston machines or devices, see 9/00. Combinations of engines with devices driven thereby; Driving elements, brakes, couplings, transmissions per se 9/00. Adapts of machines or engines for special use: Combinations of engines with devices driven thereby (aspects predominantly concerning driven devices, see the relevant classes for these devices) 11/00. Combinations of two or more machines or engines, each being of rotary-piston or oscillating-piston type (F01C 13/00 takes precedence; combinations of two or more pumps F04; fluid gearing F16H) 11/02. ...of similar working principle) 11/04. ...of complementary function, e.g. internal combustion engine with supercharger) 11/06. ...of dissimilar working principle) 11/08. ...of complementary function, e.g. internal combustion engine with supercharger) 17/00. Arrangements for drive of co-operating members, e.g. for rotary piston and casing 17/02. ...of toothed-gearing type (F01C 1/077 takes precedence) 17/04. ...of cam-and-follower type (F01C 1/067 takes precedence) 17/06. ...using cranks, universal joints or similar elements (F01C 1/07 takes precedence) 17/063. ...with only rolling movement) 17/066. ...with an intermediate piece sliding along perpendicular axes, e.g. Oldham coupling) 19/00. Sealing arrangements in rotary-piston machines or engines (sealings in general F16) 19/005. ...of structure and composition of sealing elements such as sealing strips, sealing rings and the like; Coating of these elements (vane construction F01C 21/0809; piston rings and ring sealings of similar construction in general F16D 900)) 19/02. ...Radially-movable sealings for working fluids 19/025. ...Radial sealing elements specially adapted for intermeshing engagement type machines or engines, e.g. gear machines or engines) 19/04. ...of rigid material 19/06. ...of resilient material 19/08. Axially-movable sealings for working fluids

20/00. Control of, monitoring of, or safety arrangements for, machines or engines 20/02. ...specially adapted for several machines or engines connected in series or in parallel 20/04. ...specially adapted for reversible machines or engines 20/06. ...specially adapted for stopping, starting, idling or no-load operation 20/08. ...characterised by varying the rotational speed 20/10. ...characterised by changing the positions of the inlet or outlet openings with respect to the working chamber 20/12. ...using sliding valves 20/125. ...with sliding valves controlled by the use of fluid other than the working fluid) 20/14. ...using rotating valves 20/16. ...using lift valves 20/18. ...characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings F01C 20/10) 20/185. ...by varying the useful pumping length of the cooperating members in the axial direction) 20/20. ...by changing the form of the inner or outlet contour of the working chamber 20/22. ...by changing the eccentricity between cooperating members 20/24. ...characterised by using valves for controlling pressure or flow rate, e.g. discharge valves (F01C 20/10 takes precedence) 20/26. ...using bypass channels 20/265. ...{being obtained by displacing a lateral sealing face) 20/28. ...Safety arrangements; Monitoring 21/00. Component parts, details or accessories not provided for in groups F01C 1/00 - F01C 20/00 21/001. ...{Injection of a fluid in the working chamber for sealing, cooling and lubricating (sealing only F01C 17/00; lubrication only F01C 21/04; cooling only F01C 21/06; injecting water or steam in internal combustion engines F02B 47/02, F02D 21/00, F02M 25/00)} 21/002. ...{with control systems for the injection of the fluid) 21/003. ...{Systems for the equilibration of forces acting on the elements of the machine (interstice adjustment other than by fluid pressure F01C 21/02)} 21/005. ...{Internal leakage control) 21/006. ...{Equalization of pressure pulses (silencing for compressors F04C 20/06) 21/007. ...{General arrangements of parts; Frames and supporting elements) 21/008. ...{Driving elements, brakes, couplings, transmissions specially adapted for rotary or oscillating-piston machines or engines (brakes, couplings, transmissions per se F16, B60)}
Arrangements of bearings (bearing constructions F16C)

Lubrication (of machines or engines in general F01M)

Control systems for the circulation of the lubricant

Heating: Cooling (of machines or engines in general F01P; Heat insulation (heat insulation in general F16L)

Rotary pistons (reciprocating pistons in general F16J)

Construction of vanes or vane holders

[ Vane tracking; control therefor

by mechanical means

by fluid means

the fluid being the working fluid

the fluid being other than the working fluid

the vanes consisting of two or more parts

for synchronised movement of the vanes

Outer members for co-operation with rotary pistons; Casings (casings for rotary engines or machines in general F16M)

Adjustment of the interstices between moving and fixed parts of the machine by means other than fluid pressure)

[ Stators; Members defining the outer boundaries of the working chamber

with a radial surface, e.g. cam rings

with an axial surface, e.g. side plates

[Control of working fluid admission or discharge

[Arrangements for supercharging the working space (similar arrangements for internal combustion engines F02B 33/00, F02B 27/00)

for variable fluid distribution

Variation of the working chamber

by changing the eccentricity of an element with respect to another element

by changing the form of the radially inner or the radially outer contour of the working chamber

by using valves regulating pressure and flow rate, e.g. discharge valves

using a by-pass channel

being obtained by displacing a lateral sealing face

with venting means

with several machines or engines connected in series or in parallel

with reversible machines or engines

by varying the rotational speed

Safety arrangements

Stopping or starting, idling or no-load operation