CPC COOPERATIVE PATENT CLASSIFICATION

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

NOTE

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.

In this subclass, the following expression is used with the meaning indicated:

- "rotary-piston machine" includes the German expressions "Drehkolbenmaschinen", "Kreiskolbenmaschinen" and "Umlaufkolbenmaschinen".

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".

F01C 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 to F01C 1/28.

F01C 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

F01C 1/0207 .. {both members having co-operating elements in spiral form}

F01C 1/0215 ... {where only one member is moving}

F01C 1/0223 .... {with symmetrical double wraps}

F01C 1/023 ... {where both members are moving}

F01C 1/0238 .... {with symmetrical double wraps}

F01C 1/0246 ... {Details concerning the involute wraps or their base, e.g. geometry}

F01C 1/0253 .... { Details concerning the base}

F01C 1/0261 ..... { Details of the ports, e.g. location, number, geometry}

F01C 1/0269 .... { Details concerning the involute wraps}

F01C 1/0276 ..... { Different wall heights}

F01C 1/0284 ..... { Details of the wrap tips}

F01C 1/0292 ..... { Ports or channels located in the wrap}

F01C 1/04 .. of internal-axis type

F01C 1/045 ... { having a C-shaped piston}

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

F01C 1/063 .. with coaxially-mounted members having continuously-changing circumferential spacing between them

F01C 1/067 ... having cam-and-follower type drive

F01C 1/07 ... having crankshaft-and-connecting-rod type drive

F01C 1/073 ... having pawl-and-ratchet type drive

F01C 1/077 ... having toothed-gearing type drive

F01C 1/08 . of intermeshing engagement type, i.e. with engagement of co- operating members similar to that of toothed gearing

F01C 1/082 .. {Details specially related to intermeshing engagement type machines or engines}

F01C 1/084 ... {Toothed wheels}

F01C 1/086 ... {Carter}

F01C 1/088 ... { Elements in the toothed wheels or the carter for relieving the pressure of fluid imprisoned in the zones of engagement}

F01C 1/10 .. of internal-axis type with the outer member having more teeth or tooth-equivalents, e.g. rollers, than the inner member

F01C 1/101 ... {Moineau-type}

F01C 1/102 ... {with a crescent shaped filler element located between the intermeshing elements}

F01C 1/103 ... {the two members rotating simultaneously around their respective axes}

F01C 1/104 ... {one member having simultaneously a rotational movement about its own axis and an orbital movement}

F01C 1/105 .... {and having an articulated driving shaft}

F01C 1/107 ... with helical teeth

F01C 1/113 ... the inner member carrying rollers intermeshing with the outer member

F01C 1/12 .. of other than internal-axis type

F01C 1/123 ... {with tooth-like elements, extending generally radially from the rotor body cooperating with recesses in the other rotor, e.g. one tooth}

F01C 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}

F01C 1/14 ... with toothed rotary pistons

F01C 1/16 .... with helical teeth, e.g. chevron-shaped, screw type {(for non-parallel axes of movement F01C 3/00)}

F01C 1/165 ..... {having more than two rotary pistons with parallel axes}

F01C 1/18 .... with similar tooth forms (F01C 1/16 takes precedence)

F01C 1/20 . . . . with dissimilar tooth forms (F01C 1/16 takes precedence)

F01C 1/22 . of internal-axis type with equidirectional movement of co-operating members at the point 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

F01C 1/24 . of counter-engagement type, i.e. the movement of co-operating members at the points of engagement being in opposite directions

F01C 1/26 . . of internal-axis type

F01C 1/28 . . of other than internal-axis type

F01C 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

F01C 1/32 . . having both the movement defined in group F01C 1/02 and relative reciprocation between the co-operating members

F01C 1/321 . . . { with vanes hinged to the inner member and reciprocating with respect to the inner member}

F01C 1/322 . . . { with vanes hinged to the outer member and reciprocating with respect to the outer member}

F01C 1/324 . . . with vanes hinged to the inner member and reciprocating with respect to the outer member

F01C 1/328 . . . . and hinged to the outer member

F01C 1/332 . . . with vanes hinged to the outer member and reciprocating with respect to the inner member

F01C 1/336 . . . . and hinged to the inner member

F01C 1/34 . . having the movement defined in group F01C 1/08 or F01C 1/22 and relative reciprocation between the co-operating members

F01C 1/344 . . . with vanes reciprocating with respect to the inner member

F01C 1/3441 . . . . {the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation}

F01C 1/3442 . . . . . {the surfaces of the inner and outer member, forming the working space, being surfaces of revolution}

F01C 1/3443 . . . . . {with a separation element located between the inlet and outlet opening}

F01C 1/3445 . . . . . {the vanes having the form of rollers, slippers or the like}

F01C 1/3446 . . . . {the inner and outer member being in contact along more than one line or surface}

F01C 1/3447 . . . . . {the vanes having the form of rollers, slippers or the like}

F01C 1/3448 . . . . {with axially movable vanes}

F01C 1/348 . . . . the vanes positively engaging, with circumferential play, an outer rotatable member

F01C 1/352 . . . . the vanes being pivoted on the axis of the outer member

F01C 1/356 . . . with vanes reciprocating with respect to the outer member

F01C 1/3562 . . . . {the inner and outer member being in contact along one line or continuous surface substantially parallel to the axis of rotation}

F01C 1/3564 . . . . . {the surfaces of the inner and outer member, forming the working space, being surfaces of revolution}

F01C 1/3566 . . . . {the inner and outer member being in contact along more than one line or surface}

F01C 1/3568 . . . . {with axially movable vanes}

F01C 1/36 . . having both the movements defined in sub-groups F01C 1/22 and F01C 1/24

F01C 1/38 . . having the movement defined in group F01C 1/02 and having a hinged member (F01C 1/32 takes precedence)

F01C 1/39 . . . with vanes hinged to the inner as well as to the outer member

F01C 1/40 . . having the movement defined in group F01C 1/08 or F01C 1/22 and having a hinged member

F01C 1/44 . . . with vanes hinged to the inner member

F01C 1/46 . . . with vanes hinged to the outer member

F01C 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)

F01C 3/02 . the axes being arranged at an angle of 90 degrees

F01C 3/025 . . {of intermeshing engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing}

F01C 3/04 . . with axially sliding vanes

F01C 3/06 . the axes being arranged otherwise than at an angle of 90 degrees

F01C 3/08 . . of intermeshing-engagement type, i.e. with engagement of co-operating members similar to that of toothed gearing

F01C 3/085 . . . {the axes of cooperating members being on the same plane}

F01C 5/00 **Rotary-piston machines or engines with the working-chamber walls at least partly resiliently deformable**

F01C 5/02 . the resiliently-deformable wall being part of the inner member, e.g. of a rotary piston

F01C 5/04 . the resiliently-deformable wall being part of the outer member, e.g. of a housing

F01C 5/06 . the resiliently-deformable wall being a separate member

F01C 5/08 . . of tubular form, e.g. hose

F01C 7/00 **Rotary-piston machines or engines with fluid ring or the like**

F01C 9/00 **Oscillating-piston machines or engines**

F01C 9/002 . {the piston oscillating around a fixed axis}

F01C 9/005 . {the piston oscillating in the space, e.g. around a fixed point (rotary piston machines or engines with non-parallel axes of rotation between co-operating members F01C 3/00)}

F01C 9/007 . {the points of the moving element describing approximately an alternating movement in axial direction with respect to the other element}

F01C 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)

F01C 11/002 . {of similar working principle}

F01C 11/004 . . {and of complementary function, e.g. internal combustion engine with supercharger}

F01C 11/006 . {of dissimilar working principle}

F01C 11/008 . . {and of complementary function, e.g. internal combustion engine with supercharger}

NOTE

Multi-stage steam engines or similar machines are not considered as having complementary function

F01C 13/00 **Adaptations 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)

F01C 13/02 . for driving hand-held tools or the like

F01C 13/04 . for driving pumps or compressors

F01C 17/00 **Arrangements for drive of co-operating members, e.g. for rotary piston and casing**

F01C 17/02 . of toothed-gearing type (F01C 1/077 takes precedence)

F01C 17/04 . of cam-and-follower type (F01C 1/067 takes precedence)

F01C 17/06 . using cranks, universal joints or similar elements (F01C 1/07 takes precedence)

F01C 17/063 . . {with only rolling movement}

F01C 17/066 . . { with an intermediate piece sliding along perpendicular axes, e.g. Oldham coupling}

F01C 19/00 **Sealing arrangements in rotary-piston machines or engines** (sealings in general F16J)

F01C 19/005 . { Structure and composition of sealing elements such as sealing strips, sealing rings and the like; Coating of these elements (vane construction **F01C 21/08B**; piston rings and ring sealings of similar construction in general F16J 9/00)}

F01C 19/02 . Radially-movable sealings for working fluid

F01C 19/025 . . {Radial sealing elements specially adapted for intermeshing engagement type machines or engines, e.g. gear machines or engines}

F01C 19/04 . . of rigid material

F01C 19/06 . . of resilient material

F01C 19/08 . Axially-movable sealings for working fluid

F01C 19/085 . . {Elements specially adapted for sealing of the lateral faces of intermeshing-engagement type machines or engines, e.g. gear machines or engines}

F01C 19/10 . Sealings for working fluids between radially and axially movable parts

F01C 19/12 . for other than working fluid

F01C 19/125 . . {Shaft sealings specially adapted for rotary or oscillating-piston machines or engines}

F01C 20/00 **Control of, monitoring of, or safety arrangements for, machines or engines**

F01C 20/02 . specially adapted for several machines or engines connected in series or in parallel

F01C 20/04 . specially adapted for reversible machines or engines

F01C 20/06 . specially adapted for stopping, starting, idling or no-load operation

F01C 20/08 . characterised by varying the rotational speed

F01C 20/10 . characterised by changing the position of the inlet or outlet openings with respect to the working chamber

F01C 20/12 . . using sliding valves

F01C 20/125 . . . {with sliding valves controlled by the use of fluid other than the working fluid}

F01C 20/14 . . using rotating valves

F01C 20/16 . . using lift valves

F01C 20/18 . characterised by varying the volume of the working chamber (by changing the positions of inlet or outlet openings F01C 20/10)

F01C 20/185 . . { by varying the useful pumping length of the cooperating members in the axial direction}

F01C 20/20 . . by changing the form of the inner or outlet contour of the working chamber

F01C 20/22 . . by changing the eccentricity between cooperating members

F01C 20/24 . characterised by using valves regulating pressure or flow rate, e.g. discharge valves, unloading valves (F01C 20/10 takes precedence)

F01C 20/26 . . using bypass channels

F01C 20/265 . . . {being obtained by displacing a lateral sealing face}

F01C 20/28 . Safety arrangements; Monitoring

F01C 21/00 Component parts, details or accessories not provided for in groups F01C 1/00 to F01C 20/00

F01C 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)}

F01C 21/002 . . {with control systems for the injection of the fluid}

F01C 21/003 . {Systems for the equilibration of forces acting on the elements of the machine (interstice adjustment other than by fluid pressure F01C 21/102)}

F01C 21/005 . . {Internal leakage control}

F01C 21/006 . . {Equalization of pressure pulses (silencing for compressors F04C 29/06)}

F01C 21/007 . {General arrangements of parts; Frames and supporting elements}

F01C 21/008 . {Driving elements, brakes, couplings, transmissions specially adapted for rotary or oscillating-piston machines or engines (brakes, couplings, transmissions per se F16, B60)}

F01C 21/02 . Arrangements of bearings (bearing constructions F16C)

F01C 21/04 . Lubrication (of machines or engines in general F01M)

F01C 21/045 . . {Control systems for the circulation of the lubricant}

F01C 21/06 . Heating; Cooling (of machines or engines in general F01P); Heat insulation (heat insulation in general F16L)

F01C 21/08 . Rotary pistons (reciprocating piston in general F16J)

F01C 21/0809 . . {Construction of vanes or vane holders}

F01C 21/0818 . . . {Vane tracking; control therefor}

F01C 21/0827 . . . . {by mechanical means}

F01C 21/0836 . . . . . {comprising guiding means, e.g. cams, rollers}

F01C 21/0845 . . . . . {comprising elastic means, e.g. springs}

F01C 21/0854 . . . . {by fluid means}

F01C 21/0863 . . . . . {the fluid being the working fluid}

F01C 21/0872 . . . . . {the fluid being other than the working fluid}

F01C 21/0881 . . . {the vanes consisting of two or more parts}

F01C 21/089 . . . {for synchronised movement of the vanes}

F01C 21/10 . Outer members for co-operation with rotary pistons; Casings (casings for rotary engines or machines in general F16M)

F01C 21/102 .. {Adjustment of the interstices between moving and fixed parts of the machine by means other than fluid pressure}

F01C 21/104 .. {Stators; Members defining the outer boundaries of the working chamber}

F01C 21/106 ... {with a radial surface, e.g. cam rings}

F01C 21/108 ... {with an axial surface, e.g. side plates}

F01C 2021/12 . {Control of working fluid admission or discharge }

F01C 2021/125 .. {Arrangements for supercharging the working space }

F01C 2021/14 .. {for variable fluid distribution }

F01C 2021/16 . {Other regulation or control }

F01C 2021/1606 .. {Variation of the working chamber }

F01C 2021/1612 ... {by changing the eccentricity of an element with respect to another element }

F01C 2021/1618 ... {by changing the positions of the inlet and outlet openings with respect to the working chambers }

F01C 2021/1625 .... {with sliding or rotating valves, adjustable in position }

F01C 2021/1631 ..... {with sliding valves controlled by the use of fluid other than the working fluid }

F01C 2021/1637 ... {by changing the form of the radially inner or the radially outer contour of the working chamber }

F01C 2021/1643 .. {by using valves regulating pressure and flow rate, e.g. discharge valves }

F01C 2021/165 ... {using a by-pass channel }

F01C 2021/1656 .... {being obtained by displacing a lateral sealing face }

F01C 2021/1662 ... {with venting means }

F01C 2021/1668 .. {with several machines or engines connected in series or in parallel }

F01C 2021/1675 .. {with reversible machines or engines }

F01C 2021/1681 .. {by varying the rotational speed }

F01C 2021/1687 .. {Safety arrangements }

F01C 2021/1693 .. {Stopping or starting, idling or no-load operation }

F01C 21/18 . Arrangements for admission or discharge of the working fluid, e.g. constructional features of the inlet or outlet

F01C 21/183 .. {Arrangements for supercharging the working space (similar arrangements for internal combustion engines F02B 33/00, F02B 27/00)}

F01C 21/186 .. {for variable fluid distribution}