Title (en)

One-direction pumping apparatus with a reversible pump.

Title (de)

Einbahnpumpvorrichtung mit Umkehrpumpe.

Title (fr)

Dispositif de pompage unidirectionnel à pompe réversible.

Publication

EP 0247947 A1 19871202 (FR)

Application

EP 87401205 A 19870527

Priority

FR 8607725 A 19860529

Abstract (en)

1. A unidirectional pumping apparatus having a reversible pump, said apparatus being intended to receive a fluid to be pumped at an inlet opening (14) and to deliver it from an outlet opening, with a rotary motor (MT) whose direction of rotation may be reversed, said apparatus comprising : first and second intermediate chambers (8, 8') ; a rotary pump (P) connected between these two intermediate chambers in order to thrust the fluid to be pumped from one of said intermediate chambers in which pressure is then reduced (8, Figure 2) towards the other in which pressure is then increased (8'), with the direction of said thrust changing with the direction of rotation of said pump, and said pump being driven by said motor (MT) such that the direction of said thrust is likewise liable to be reversed so that each of said first and second intermediate chambers is sometimes at reduced pressure and sometimes at increased pressure ; and unidirectional inlet communication means for allowing the fluid to be pumped to pass from said inlet opening to each of said two intermediate chambers, and unidirectional outlet communication means for enabling said fluid to pass from each of said two intermediate chambers to said outlet opening, said means being passive means driven by the pressure difference appearing in said fluid between the two intermediate chambers under the action of said pump, such that said pump always thrusts said fluid from the inlet opening towards the outlet opening regardless of its direction of rotation ; said unidirectional inlet communication means comprising an inlet bore (4) extending from a first end to a second end, which ends are in communication with said first and second intermediate chambers (8, 8') respectively, said inlet opening (14) being in communication with said bore via a middle opening (14) in the side wall thereof, abutment means (84, 84'), and an inlet distributing slide (6) sliding in said inlet bore under the thrust of said pressure difference between the intermediate chambers between first and second extreme positions (L, L') defined by said abutments and situated close to said first and second ends of said bore respectively ; said unidirectional outlet communication means comprising an outlet bore (5) extending between first and second ends (5A, 5B) which communicate with said first and second intermediate chambers (8, 8') respectively, a middle opening (13) in the side wall of said bore communicating with said outlet opening (13), abutment means (84, 84'), and an outlet distributing slide (7) closing said outlet bore (5) and sliding therein under the thrust of said pressure difference between the intermediate chambers (8, 8') between first and second extreme positions defined by said abutments adjacent to said first and second ends (5A, 5B) respectively ; said apparatus being characterized by the fact that said first and second ends of the inlet bore (4) communicate with said first and second intermediate chambers (8, 8') via first and second lateral hollows (9, 9') formed in the side wall of said bore ; said inlet slide (6) including first and second closure heads (61, 63) each suitable for closing sections of said bore (4) adjacent to said first and second lateral openings (9, 9') respectively ; and a spacer (62) interconnecting these two heads and holding them at a distance apart from each other, with the length of said spacer and the positions of said abutments (84, 84') being such that when the slide is in said second or first extreme position, the first or the second head closes said bore between said middle opening (14) and said first or second lateral hollow, respectively, and the second or the first head lies beyond said second or first lateral hollow respectively ; said first and second extreme positions of the outlet slide (7) placing said slide between said middle opening (13) of the outlet bore (5) and one or other of said first and second ends (5A, 5B) of said bore in such a manner that, when said slide is in said positions, it does not constitute an obstacle for said fluid flow between said opening and one or other of said second and first intermediate chambers (8', 8) respectively.

IPC 1-7

F04C 15/04

IPC 8 full level

F04C 14/04 (2006.01)

CPC (source: EP)

F04C 14/04 (2013.01)

Citation (search report)

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