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(71) Applicant: **PROWECO BV.**
Wilhelminasingel 92
NL-9202 NC Maastricht(NL)

(72) Inventor: **van den Berg, Johannes Vincentius**
Duinendreef, 27
B-2080 Kapellen(BE)

(72) Inventor: **Teerling-Eppens, Harmanna Reina**
Ceintuurbaan N 24
Roden(NL)

(72) Inventor: **Teerling, Leonard**
Ceintuurbaan N 24
Roden(NL)

(54) Construction and or application in relation to the generation or the use of pressures, forces, flows and movements in and by means of hydraulic or hydro-pneumatic systems.

(57) The main object of this invention is the generation of pressures, forces, flows and motion and several methods are given in principle concerning the application of the hydraulic scheme as well as the constructions which are especially suitable for the generation.

The main principal in the generation of hydraulic pressures or forces, is the alternating transformation of the kinetic energy of a moving mass into the hydraulic energy and in revers.

It should be noted herewith that, thanks the energy accumulating function of the mass, no hydraulic energy is lost unless this is used for the process of thermal wast (vicositif-wastes). So it is possible to run processes containing a lot of energy, while the consummation of energy only is determined by the process itself and the friction of the system.

To realise the, for these processes needed very high momentary accellerations and flows, a rotating valve is used, which is as universal as possible and witch has adjustable openingtimes. When the needed momentary accellerations and flows are more extreem, a special accumulator with several, automatic matching, pressure controlled valves is used.

Thanks to the accumulation of hydraulic- as well as kinetic energy, it is possible to deliver an average continuous flow of energy by the hydraulic pump, in spite of the very discontinus consummation of energy.

Typical for the difference in the use of the rotating valve and the special accumulator is that, the hydraulic flow, activated by the displacement of a plunjer fixed to a mass, is, in the first case pressed in or surged out of two accumulators, while in the second case, the main part of the hydraulic flow is displaced from the front to the back of the plunjer, across or around it. The construction of the lastprincipal is the so called "mass motion reactor".

The applications relating to the invention are especially, those that need vibrations containing a lot of energy, or adjustable forms of vibration, or a cheaper and more apted system of hydraulic control as useble (servo valves), to save the commercial possibilities.

Furthermore the applications are mainly related to transport under influence of shock, asymmetric vibrations, dynamic effects by asymmetric vibrations and effects on the frictional resistance by vibrations and savings in and simplification of constructions by replacement of static forces which require a frame through dynamic forces where the reaction is supplied by the inertia of a mass. Where this is useful for the speed, and the simplicity is the pneumatic drive combined with the hydraulic drive.

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EUROPEAN SEARCH REPORT

Application number

EP 80 20 0114

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	<p><u>DE - A - 2 418 858 (SIEKE)</u></p> <p>* Page 11, line 22 - page 12, line 18 *</p> <p>--</p> <p><u>FR - A - 2 162 686 (POCLAIN)</u></p> <p>* Whole document *</p> <p>--</p> <p>POLYTECHNISCH TIJDSCHRIFT WERK-TUIGBOUW, vol. 32, no. 10, October 1977, page 594, Stam B.V. Den Haag, NL. "Wisselstroomhydrauliek"</p> <p>--</p>	<p>4,9</p> <p>4,9</p> <p>6</p>	<p>F 15 B 21/12 1/02</p> <p>B 06 B 1/18</p> <p>E 02 D 7/18</p> <p>E 01 C 19/30</p> <p>E 04 G 21/12</p> <p>B 02 C 1/00</p>
X	<p><u>US - A - 2 755 898 (BELL)</u></p> <p>* Column 2, line 70 - column 3, line 20 *</p> <p>--</p> <p><u>FR - A - 1 557 449 (SUOZO)</u></p> <p>* Page 3, right-hand column, line 53 - page 4, left-hand column, line 26 *</p> <p>----</p>	<p>26,29, 32,37</p> <p>26,31</p>	<p>TECHNICAL FIELDS SEARCHED (Int. Cl.)</p> <p>F 15 B F 16 D</p>
			CATEGORY OF CITED DOCUMENTS
			<p>X: particularly relevant</p> <p>A: technological background</p> <p>O: non-written disclosure</p> <p>P: intermediate document</p> <p>T: theory or principle underlying the invention</p> <p>E: conflicting application</p> <p>D: document cited in the application</p> <p>L: citation for other reasons</p>
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	05-05-1981	KNOPS	



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☒ CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☒ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for ten claims. viz: claims 4,6,7,9,26,29,31,32,36,37.

☒ LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

- 1) Claims 4,6,7,9: Hydraulic system with a piston driven by two or more hydraulic pressures through a periodically operated valve.
- 2) Claims 26,29,31,32,36,37: Energy recuperation through hydraulic accumulator charging during braking of a mass: "mass movement reactor".

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for ten claims. viz: claims 4,6,7,9,26,29,31,32,36,37.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims: