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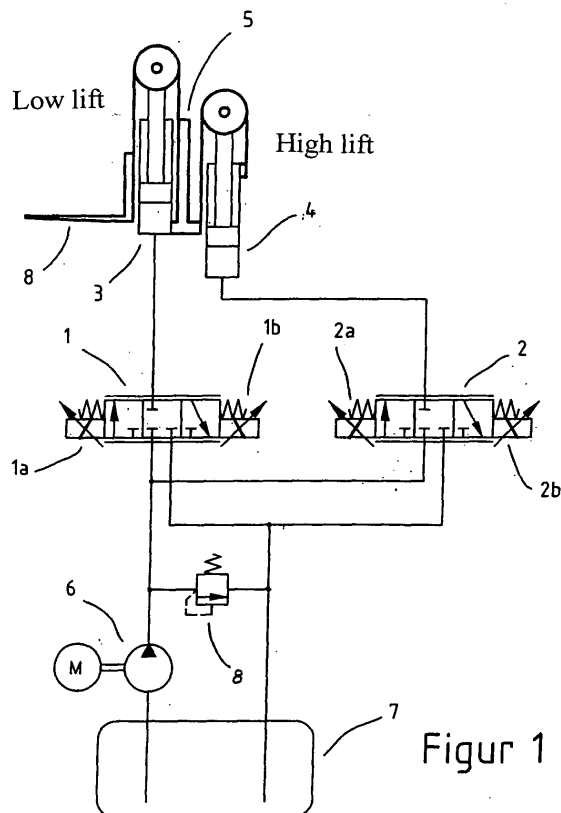
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(54) **Hydraulic lifting device for a telescopically extendable fork lift truck mast**

(57) Device at fork truck where in a telescopically extendable mast in the outermost or uppermost mast section is arranged a movement journaling of movement of the forks over the major part of the height of the uppermost mast section, and where lifting movements are achieved hydraulically by means of one or several hydraulic pistons (4) for the lifting of the mast sections and one or several other hydraulic pistons (3) for the lifting of the forks (8) in relation to the uppermost mast section (5). In the feed conduits to the hydraulic cylinders proportional valves 1, 2 are arranged in order to, at the transition shift between low lift movement and high lift movement and vice versa successively control the oil flow to and from the cylinders of the different systems respectively so that an unnoticeable transition and constant speed is obtained.



Figur 1



European Patent
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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	DE 197 10 556 A1 (JUNGHEINRICH AG [DE]) 17 September 1998 (1998-09-17)	1-3,5-9, 13,15 4,10-12, 14,17	INV. B66F9/22 F15B11/048
X A	----- JP 08 188398 A (NISSAN MOTOR) 23 July 1996 (1996-07-23)	15 1	
Y	----- DE 44 23 644 A1 (BUCHHOLZ HYDRAULIK [DE]) 11 January 1996 (1996-01-11) * the whole document *	4,14	
Y	----- EP 1 136 433 A (TOYODA AUTOMATIC LOOM WORKS [JP] TOYOTA JIDOSHOKKI KK [JP]) 26 September 2001 (2001-09-26) * paragraph [0029] * * abstract; figure 1 *	10-12	
Y	----- DE 100 47 631 A1 (LINDE AG [DE]) 11 April 2002 (2002-04-11) * abstract *	17	
A	----- DE 44 25 455 A1 (BOSCH GMBH ROBERT [DE]) 25 January 1996 (1996-01-25) * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC) B66F F15B
A	----- DE 198 31 828 A1 (LINDE AG [DE]) 20 January 2000 (2000-01-20) * abstract *	17	
A	----- DE 100 33 094 A1 (BUCHHOLZ HYDRAULIK [DE]) 17 January 2002 (2002-01-17) * the whole document *		
A	----- DE 10 16 194 B (HANS STILL AG) 19 September 1957 (1957-09-19) * the whole document *		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 March 2007	Examiner Ferrien, Yann
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 44 5026

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-03-2007

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 19710556	A1	17-09-1998	EP	0866026 A2	23-09-1998
JP 8188398	A	23-07-1996	JP	3175513 B2	11-06-2001
DE 4423644	A1	11-01-1996	NONE		
EP 1136433	A	26-09-2001	JP	2001261297 A	26-09-2001
			US	6611746 B1	26-08-2003
DE 10047631	A1	11-04-2002	NONE		
DE 4425455	A1	25-01-1996	NONE		
DE 19831828	A1	20-01-2000	NONE		
DE 10033094	A1	17-01-2002	NONE		
DE 1016194	B	19-09-1957	NONE		