



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
19.04.2006 Bulletin 2006/16

(51) Int Cl.:
F15B 13/04 (2006.01) B30B 15/18 (2006.01)

(43) Date of publication A2:
07.05.2003 Bulletin 2003/19

(21) Application number: **02024492.7**

(22) Date of filing: **30.10.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Lenzotti, Eugenio**
41049 Sassuolo (Modena) (IT)

(74) Representative: **Luppi, Luigi et al**
Luppi Crugnola Bergamini & Partners S.r.l.
Viale Corassori, 54
41100 Modena (IT)

(30) Priority: **02.11.2001 IT MO20010211**

(71) Applicant: **Euromac S.p.A.**
41043 Formigine (Modena) (IT)

(54) **Improvement in a copying distributor spool in hydraulic circuits for controlling hammer motion in punching machines**

(57) Improvement in a spool of a copying distributor in a hydraulic circuit (3) for controlling the motion of a cylinder for a hammer (4) in a punching machine, including a pressurized fluid source (24a) in communication with said hydraulic circuit (3), a distributor body (5) which is connected to said hydraulic circuit through pipe fittings and is formed with pressurised-fluid supply lights (6, 33) and discharge light (7) communicating with said pipe fittings, at least one valve means (9) arranged in said hydraulic circuit to control the said distributor body (5), a spool (1) slidably mounted in said body (5) and arranged cyclically to open and close the said lights (6, 33, 7), one operating end (11) of said spool (1) extending outside said distributor body (5) through a calibrated aperture (12) and being arranged to abut against a reference member (13) designed to move rigid with said hammer (4). The improvement provides for a recess (14) formed in said operating end (11) and having one end (15) thereof blind and its other end (16) open, a pin (17) slidably mounted in said open end (16) and arranged to be displaced therein by pressurised fluid flows controlled by said valve means (9), and at least one duct (18) formed in said distributor body (5) and arranged to feed pressurised fluid from said fluid source (24a) to said recess (14).

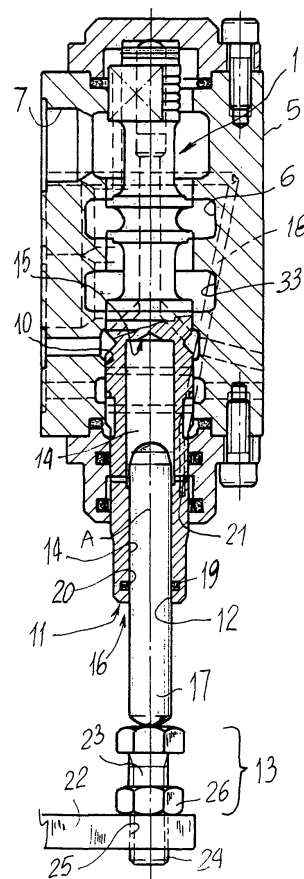


FIG. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 4492

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	BE 444 483 A (M F PAUL) 31 March 1942 (1942-03-31) * page 3, line 37 - page 9, line 2; figure 3 *	1-7	F15B13/04 B30B15/18
A	EP 1 138 958 A (EUROMAC S.R.L.) 4 October 2001 (2001-10-04) * the whole document *	1-7	
A	US 3 534 679 A (GASTON SEBASTIEN FORICHON) 20 October 1970 (1970-10-20) * column 2, line 18 - column 3, line 7; figure 1 *	1-7	
A	FR 2 425 565 A (RENAULT) 7 December 1979 (1979-12-07) * page 1, line 1 - page 4, line 19; figure 1 *	1-7	
			TECHNICAL FIELDS SEARCHED (IPC)
			F15B B21D B30B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 February 2006	Examiner Busto, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

1
EPO FORM 1503 03.82 (P04001)

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

EP 02 02 4492

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-02-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
BE 444483	A	NONE	
EP 1138958	A	04-10-2001	
		CN 1319728 A	31-10-2001
		GB 2360728 A	03-10-2001
		US 2001025487 A1	04-10-2001
US 3534679	A	20-10-1970	
		DE 1627819 A1	14-01-1971
		FR 1511906 A	02-02-1968
		GB 1190703 A	06-05-1970
FR 2425565	A	07-12-1979	
		NONE	