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- (71) Applicant: Aida Engineering Ltd.
 Sagamihara-shi, Kanagawa 229-1181 (JP)

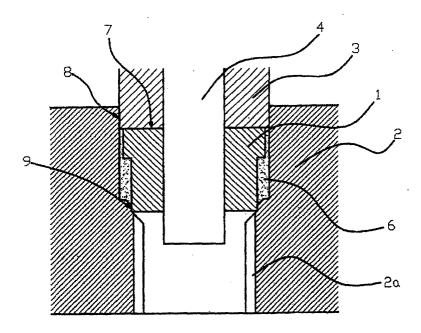
- (72) Inventors:
 - Kanamaru, Hisanobu Sagamihara-shi, Kanagawa 229-1181 (JP)
 - Kobayashi, Kazub Sagamihara-shi, Kanagawa 229-1181 (JP)
- (74) Representative: Shelley, Mark Raymond et al K R Bryer & Co.,7 Gay Street Bath BA1 2PH (GB)

(54) Pressure controlled fluid pressure extrusion method

(57) The lower part of a material blank to be molded forms a lower seal (9) with a die (2). A punch (3) applying a molding force to the material forms an upper seal (7) with the perimeter of the die. The space between the upper and lower seals (9) forms a pressure chamber (6) that is filled with a fluid. As the punch descends into the

die, the fluid is pressurized. The lower seal (9) is a complete seal to prevent leakage of fluid into the die. The upper seal is given a clearance with the die that permits controlled leakage of fluid therepast at a rate that limits the maximum pressure in the pressure chamber while permitting the development of an adequate pressure on the material being molded.

Fig. 2





EUROPEAN SEARCH REPORT

Application Number EP 01 30 4835

***************************************	DOCUMENTS CONSIDE	RED TO BE RELEVANT		
Category	Citation of document with in- of relevant passa		Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.CI.7)
X	US 3 382 691 A (DERE 14 May 1968 (1968-05 * column 1, line 13- * column 3, line 9-2	5-14) -28 *	1-7	B21J5/12 B21J5/04 B21C23/00 B21C23/10 B21K1/12
Х	GB 1 215 452 A (UNIT ENERGY AUTHORITY) 9 December 1970 (197 * page 1, line 30-57	70-12-09)	1-7	B21K1/30
А	US 3 983 730 A (FIOR 5 October 1976 (1976 * column 1, line 56 figure 1 *			
А	US 3 765 222 A (LUNE 16 October 1973 (197 * column 1, line 5-1	73-10-16)		
				TECHNICAL FIELDS SEARCHED (Int.Cl.7)
				B21C B21K B21J
	The present coarch report has b	oon drawn up for all claims		
al die die deutsche verweite zu verweite deutsch	The present search report has be	Date of completion of the search		Examiner
	THE HAGUE	·	·	
X : part Y : part doce	ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anoth unto of the same category inological background	T : theory or princ E : earlier patent after the filling er D : document cite L : document cite	piple underlying the idocument, but publicate in the application d for other reasons	C Augé invention shed on, or

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

EP 01 30 4835

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.

04-06-2002

Patent docum cited in search r		Publication date		Patent fam member(s		Publication date
US 3382691	А	14-05-1968	GB CH DE SE	1111351 438184 1452487 318241	A A1	24-04-1968 30-06-1967 30-04-1969 08-12-1969
GB 1215452	А	09-12-1970	CH DE FR SE US	480941 1652604 1560558 345398 3513676	A1 A B	15-11-1969 01-04-1971 21-03-1969 29-05-1972 26-05-1970
US 3983730	A	05-10-1976	CA DE GB JP SE	963844 2239912 1393143 48029664 381412	A1 A A	04-03-1975 22-02-1973 07-05-1975 19-04-1973 08-12-1975
US 3765222	A	16-10-1973	SE BE CA CH DE FR GB IT	530827 2212767	A1 A1 A A1 A5 A	29-10-1973 16-08-1972 20-04-1976 30-11-1972 17-05-1973 03-11-1972 27-12-1974 10-08-1973

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