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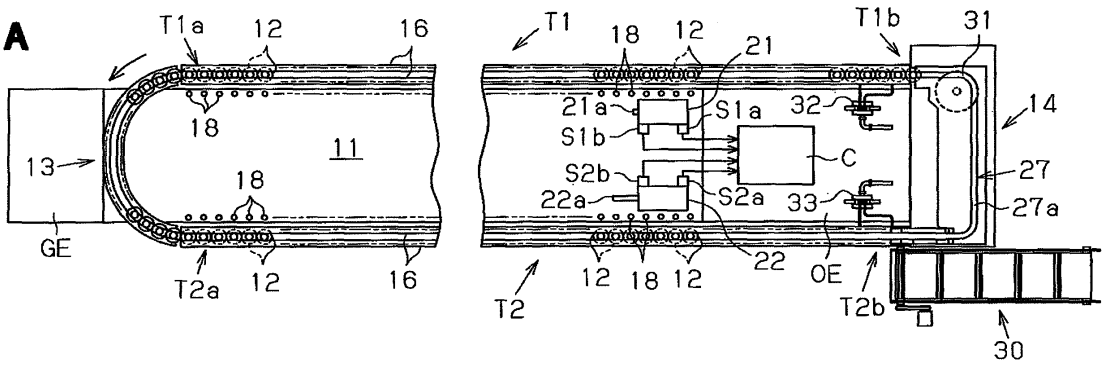
(54) Bobbin carrying apparatus in fine spinning machine

(57) A bobbin carrying apparatus in a fine spinning machine which is provided with first and second transporting devices (T1,T2), a connection portion for connecting the first and second transporting devices, first and second solenoid valves (32,33), and a control device (C) is disclosed. Each of the first and second transporting devices is provided with a peg tray path (16), a transporting member which can reciprocate so that peg trays are moved, and air cylinders for reciprocating the transporting members. The control device (C) controls the first and second solenoid valves (32,33) so that the point in time when the first air cylinder (21) starts operating is delayed relative to the point in time when the second air cylinder (22) starts operating. The bobbin carrying apparatus is provided with first and second operating period sensing portions (S1a,S1b,S2a,S2b) for sensing the operating periods of the first and second air cylinders (21,22), respectively. The control device (C) corrects the difference in time when the first and second air cylinders (21,22) start operating in accordance with the fluctuation in the operating period as sensed by the two operating period sensing portions so that peg trays on the first transporting device (T1) do not apply a pressing force to peg trays on the second transporting device (T2).

Fig.1A



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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)
A	DE 42 09 276 A1 (SCHURR STAHLECKER & GRILL [DE]) 23 September 1993 (1993-09-23) * column 5, lines 26-34; figure 5 * -----	1,8	INV. D01H9/18
A,D	JP 01 085332 A (TOYODA AUTOMATIC LOOM WORKS) 30 March 1989 (1989-03-30) * abstract * -----	1,8	
A	JP 57 161133 A (HOWA MACHINERY LTD; NISSHIN SPINNING) 4 October 1982 (1982-10-04) * abstract * -----	1,8	
A	US 5 185 993 A (FRITSCHI ISIDOR [CH] ET AL) 16 February 1993 (1993-02-16) * abstract * -----		

TECHNICAL FIELDS SEARCHED (IPC)

D01H
B65H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 November 2008	Dreyer, Claude

CATEGORY OF CITED DOCUMENTS

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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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13-11-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4209276 A1	23-09-1993	NONE	
JP 1085332 A	30-03-1989	JP 2090711 C	18-09-1996
		JP 8009813 B	31-01-1996
JP 57161133 A	04-10-1982	JP 63009050 B	25-02-1988
US 5185993 A	16-02-1993	CH 678720 A5	31-10-1991
		DE 58907005 D1	24-03-1994
		DE 58908610 D1	08-12-1994
		DE 58909240 D1	22-06-1995
		WO 9003461 A1	05-04-1990
		EP 0404875 A1	02-01-1991
		JP 2944118 B2	30-08-1999
		JP 3501506 T	04-04-1991

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82