

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 076 027 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
05.06.2002 Bulletin 2002/23

(51) Int Cl. 7: **B65H 29/70, B65H 29/14**

(43) Date of publication A2:
14.02.2001 Bulletin 2001/07

(21) Application number: **00116240.3**

(22) Date of filing: **08.08.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**

Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **09.08.1999 JP 22531899**

(71) Applicant: **Riso Kagaku Corporation
Tokyo 105 (JP)**

(72) Inventors:

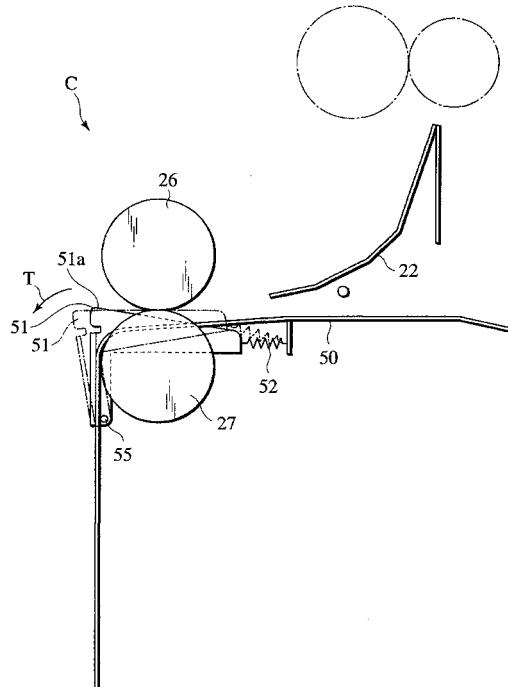
- **Higashi, Koji, Riso Kagaku Corporation,
R&D Center
Inashiki-gun, Ibaraki-ken (JP)**
- **Tojima, Takahito, Riso Kagaku Corp.,
R&D Center
Inashiki-gun, Ibaraki-ken (JP)**

(74) Representative: **HOFFMANN - EITLE
Patent- und Rechtsanwälte
Arabellastrasse 4
81925 München (DE)**

(54) Collating apparatus

(57) The collating apparatus of the present invention comprises a pair of discharged paper attitude forcing trays (51) provided at positions at both sides of a pair of discharge rollers (26,27), respectively, and each having a forcible guide surface (51a) for guiding a lower surface of a collated matter conveyed onto paper discharge guide plate (50), wherein the forcible guide surface (51a) of each of the discharged paper attitude forcing trays (51) is constituted to be positioned upward of a position at which the pair of discharge rollers (26,27) almost press-contact with each other and to allow a height of the forcible guide surface (51a) to be varied. According to the present invention, uneven flight distance does not occur, stable paper alignment is ensured, and paper jamming and paper wrinkle do not occur, irrespectively of degree of firmness of the collated matter.

FIG.9





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 04, 30 April 1999 (1999-04-30) & JP 11 005379 A (HORIZON INTERNATL KK), 12 January 1999 (1999-01-12) * abstract; figures * ---	1	B65H29/70 B65H29/14
A	KOBUS G.S.: "Variable sheet deflector for document restacking" XEROX DISCLOSURE JOURNAL., vol. 6, no. 5, 5 November 1981 (1981-11-05), pages 237-238, XP002194556 XEROX CORPORATION. STAMFORD, CONN., US * the whole document * ---	1-3	
A	PATENT ABSTRACTS OF JAPAN vol. 013, no. 392 (M-865), 30 August 1989 (1989-08-30) & JP 01 139465 A (RICOH CO LTD), 31 May 1989 (1989-05-31) * abstract * ---	1,2	
A	EP 0 616 895 A (XEROX CORP) 28 September 1994 (1994-09-28) * the whole document * ---	1,2,4	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65H
A	PATENT ABSTRACTS OF JAPAN vol. 011, no. 098 (M-575), 27 March 1987 (1987-03-27) & JP 61 248852 A (HITACHI LTD), 6 November 1986 (1986-11-06) * abstract * ---	1-3	
A	US 3 749 398 A (FUJITA A ET AL) 31 July 1973 (1973-07-31) * the whole document * ---	-/--	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	3 April 2002	Lemmen, R	
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone	T : theory or principle underlying the invention		
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date		
A : technological background	D : document cited in the application		
O : non-written disclosure	L : document cited for other reasons		
P : intermediate document	& : member of the same patent family, corresponding document		



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	EP 0 566 402 A (COMPAQ COMPUTER CORP) 20 October 1993 (1993-10-20) * figures 4,6 * -----		
TECHNICAL FIELDS SEARCHED (Int.Cl.7)			
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	3 April 2002	Lemmen, R	
CATEGORY OF CITED DOCUMENTS		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	
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			

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

EP 00 11 6240

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.

03-04-2002

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
JP 11005379	A	12-01-1999	NONE		
JP 01139465	A	31-05-1989	NONE		
EP 0616895	A	28-09-1994	US 5280901 A	25-01-1994	
			DE 69401289 D1	13-02-1997	
			DE 69401289 T2	10-07-1997	
			EP 0616895 A2	28-09-1994	
			JP 6298395 A	25-10-1994	
JP 61248852	A	06-11-1986	NONE		
US 3749398	A	31-07-1973	NONE		
EP 0566402	A	20-10-1993	US 5194904 A	16-03-1993	
			CA 2093500 A1	16-10-1993	
			CN 1085848 A	27-04-1994	
			EP 0566402 A1	20-10-1993	
			JP 2115366 C	06-12-1996	
			JP 6056329 A	01-03-1994	
			JP 8009447 B	31-01-1996	
			KR 9612773 B1	24-09-1996	
			NZ 247362 A	27-09-1994	