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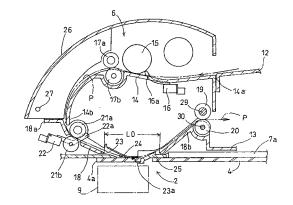
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(54) Sheet feeder in image reading apparatus

A sheet feeder includes a plurality of roller pairs (19,20), which are drive roller segments and driven roller segments that press against the drive roller segments, disposed in pairs at a downstream side of a reading point. At least an outer layer of each of the drive roller segments is constructed of a material, such as a rubber, having a high coefficient of friction relative to a document sheet and at least an outer layer of each of the driven roller segments is made from a material having a low coefficient of friction relative to the document sheet. The drive roller segments are disposed on an axis (30) perpendicular to a sheet feed direction, whereas the driven roller segments are disposed on axes (29) inclined to the sheet feed direction symmetrically about a centerline of a width of the document sheet. Further, the axes of the driven roller segments are inclined such that the end of each of the segment's axis furthest from the centerline is on one of an upstream or downstream side of a sheet feed direction and an end closest to the centerline is on one of a downstream or upstream side of the sheet feed direction opposite that of the other end.

FIG.3





EUROPEAN SEARCH REPORT

Application Number EP 04 25 1424

	DOCUMENTS CONSIDERI	ED TO BE RELEVANT			
ategory	Citation of document with indica of relevant passages	tion, where appropriate,	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
	US 6 254 078 B1 (TARUM 3 July 2001 (2001-07-6 * the whole document *	03)	1,7,9, 11,18	INV. B65H29/14	
	US 5 579 099 A (NISHI) 26 November 1996 (1996 * the whole document *	5-11-26)	1,7		
, Α	EP 1 335 575 A (CANON 13 August 2003 (2003-6 * the whole document *	08-13)	1		
				TECHNICAL FIELDS SEARCHED (IPC)	
	The present search report has been	drawn up for all claims			
	Place of search	Date of completion of the search	1	Examiner	
	The Hague	16 October 2007	De	Rijck, Freddy	
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		E : earlier patent do after the filing da D : document cited L : document cited f	T: theory or principle underlying the in E: earlier patent document, but public after the filing date D: document cited in the application L: document cited for other reasons		
	-written disclosure	& : member of the s			

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EP 04 25 1424

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.

16-10-2007

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 6254078	B1	03-07-2001	JP JP	3710636 2000181152		26-10-200 30-06-200
US 5579099	Α	26-11-1996	JP JP	3347858 7209927		20-11-200 11-08-199
EP 1335575	Α	13-08-2003	CN JP JP US	1435990 3943942 2003221145 2003141654	B2 A	13-08-200 11-07-200 05-08-200 31-07-200
						31-07-200

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