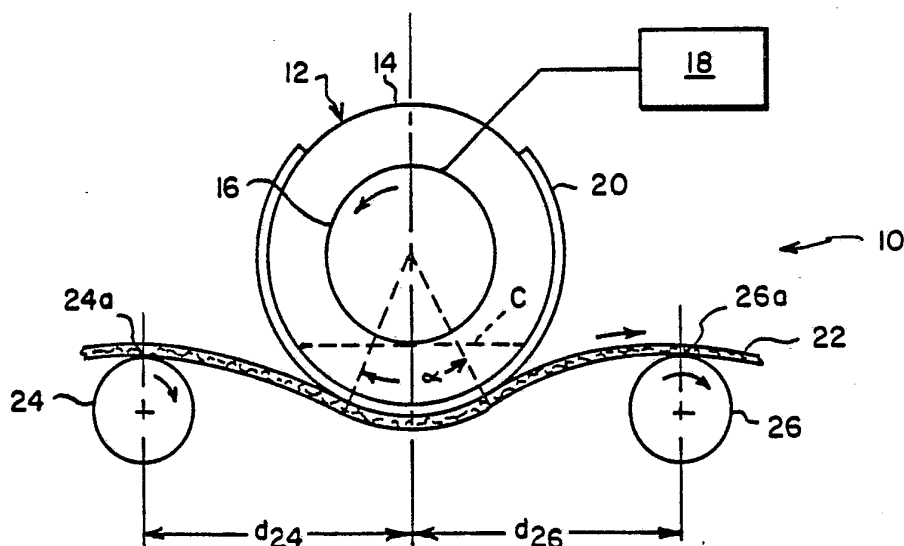




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁴ : G03G 15/16	A3	(11) International Publication Number: WO 87/ 07402 (43) International Publication Date: 3 December 1987 (03.12.87)
(21) International Application Number: PCT/US87/01117 (22) International Filing Date: 15 May 1987 (15.05.87) (31) Priority Application Numbers: 867,179 029,006 040,388 (32) Priority Dates: 27 May 1986 (27.05.86) 23 March 1987 (23.03.87) 20 April 1987 (20.04.87) (33) Priority Country: US (71) Applicant: EASTMAN KODAK COMPANY [US/US]; 343 State Street, Rochester, NY 14650 (US). (72) Inventors: FOWLKES, William, Y. ; 14 Columbine Circle, Fairport, NY 14450 (US). MORSE, Theodore, H. ; 333 Colebrook Drive, Rochester, NY 14617 (US). STOREY, Robert, C. ; 176 Valley Green Drive, Penfield, NY 14626 (US). PAXON, James, F. ; 39 Shadow Lane, Rochester, NY 14606 (US).		(74) Agent: KESSLER, Lawrence, P.; 343 State Street, Rochester, NY 14650 (US). (81) Designated States: DE (European patent), FR (European patent), GB (European patent), JP, NL (European patent). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 17 December 1987 (17.12.87)

(54) Title: ROLLER TRANSFER APPARATUS HAVING AN EXTENDED NIP EXHIBITING LOW PRESSURE

**(57) Abstract**

Roller transfer apparatus of simplified construction which has an extended transfer nip exhibiting low pressure for effecting efficient transfer of marking particle images from a dielectric support (22) with a substantial reduction in image transfer defects. In such transfer apparatus, the dielectric support in the form of a web (22) is supported by a mechanism (24, 26) offset relative to the transfer roller (12) in an upstream and/or downstream direction to position the web (22) relative to the transfer roller (12) to establish an extended contact nip zone with a low nip pressure. As an example, the support mechanism includes a pair of spaced rollers (24, 26) respectively offset relative to the transfer roller (12) in an upstream and downstream direction to provide a nip zone with a dimension of at least 0.01 m measured in the direction of roller rotation and a nip pressure in such zone of less than 2×10^4 Pa.

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INTERNATIONAL SEARCH REPORT

International Application No PCT/US 87/01117

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁴ According to International Patent Classification (IPC) or to both National Classification and IPC IPC ⁴ : G 03 G 15/16																				
II. FIELDS SEARCHED Minimum Documentation Searched ⁷ <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%; border-bottom: 1px solid black;">Classification System </td> <td style="border-bottom: 1px solid black;">Classification Symbols</td> </tr> <tr> <td style="padding-top: 10px;">IPC⁴</td> <td style="padding-top: 10px;">G 03 G 15/16 G 03 G 15/14</td> </tr> </table> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸			Classification System	Classification Symbols	IPC ⁴	G 03 G 15/16 G 03 G 15/14														
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IPC ⁴	G 03 G 15/16 G 03 G 15/14																			
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹ <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; border-bottom: 1px solid black;">Category ⁹</th> <th style="width: 60%; border-bottom: 1px solid black;">Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 30%; border-bottom: 1px solid black;">Relevant to Claim No. ¹³</th> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">Patent Abstracts of Japan, volume 6, no. 53 (P-109)(931), 8 April 1982; see the whole abstract, & JP, A, 56167165 (KONISHIROKU SHASHIN KOGYO K.K.) 22 December 1981 --</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,2</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 3942888 (MAKSYMIAK et al.) 9 March 1976 see column 1, lines 38-68; column 2, line 51 - column 3, line 23 cited in the application --</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,2</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">US, A, 4367942 (OHTSUKA) 11 January 1983 see column 6, lines 1-6; figure 3 --</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1,4,10</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">GB, A, 851384 (CHEMISCHE FABRIEK L. VAN DER GRINTEN) 19 October 1960 see figure 3 --</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">US, A, 3993021 (KLINE) 23 November 1976 see column 2, lines 35-67; figure 1 -----</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1</td> </tr> </table>			Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	Y	Patent Abstracts of Japan, volume 6, no. 53 (P-109)(931), 8 April 1982; see the whole abstract, & JP, A, 56167165 (KONISHIROKU SHASHIN KOGYO K.K.) 22 December 1981 --	1,2	Y	US, A, 3942888 (MAKSYMIAK et al.) 9 March 1976 see column 1, lines 38-68; column 2, line 51 - column 3, line 23 cited in the application --	1,2	A	US, A, 4367942 (OHTSUKA) 11 January 1983 see column 6, lines 1-6; figure 3 --	1,4,10	A	GB, A, 851384 (CHEMISCHE FABRIEK L. VAN DER GRINTEN) 19 October 1960 see figure 3 --	1	A	US, A, 3993021 (KLINE) 23 November 1976 see column 2, lines 35-67; figure 1 -----	1
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A	US, A, 3993021 (KLINE) 23 November 1976 see column 2, lines 35-67; figure 1 -----	1																		
¹⁰ Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "A" document member of the same patent family																				
IV. CERTIFICATION <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">Date of the Actual Completion of the International Search</td> <td style="width: 50%; border-bottom: 1px solid black;">Date of Mailing of this International Search Report</td> </tr> <tr> <td style="text-align: center; padding: 5px;">10th September 1987</td> <td style="text-align: center; padding: 5px;">18 NOV 1987</td> </tr> <tr> <td style="border-bottom: 1px solid black;">International Searching Authority</td> <td style="border-bottom: 1px solid black;">Signature of Authorized Officer</td> </tr> <tr> <td style="text-align: center; padding: 5px;">EUROPEAN PATENT OFFICE</td> <td style="text-align: center; padding: 5px;">M. VAN MOL </td> </tr> </table>			Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	10th September 1987	18 NOV 1987	International Searching Authority	Signature of Authorized Officer	EUROPEAN PATENT OFFICE	M. VAN MOL										
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/US 87/01117 (SA 17516)

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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