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(11)

EP 0 769 384 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
30.07.1997 Bulletin 1997/31

(51) Int Cl.⁶: **B41J 2/415**

(43) Date of publication A2:
23.04.1997 Bulletin 1997/17

(21) Application number: **96306538.8**

(22) Date of filing: **09.09.1996**

(84) Designated Contracting States:
DE FR GB

(30) Priority: **18.10.1995 US 546166**

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(54) Toner ejection printing

(57) The present invention provides a method and apparatus for toner ejection printing (TEP) that improves print quality by synchronizing the developer roll (DR) voltage to the gate electrode voltage with the proper phase relationship, providing tonal evenness in the print quality and maximising the development time window. It further provides an improved DR waveform for TEP. The apparatus (100) for toner ejection printing includes a developer supply (102) for providing electrostatically charged toner particles (104), a printhead structure (106) including a plurality of apertures (108) confronting a back electrode (110) disposed in opposite relation with a surface of the printhead structure (106). Electrical signals applied to the printhead include a voltage applied to the developer supply (102) and a voltage applied to the gate electrode (126) of the printhead, where the voltage applied to the developer supply and the gate electrode are typically synchronized to maximise the development time window and thus maximise the amount of toner deposited. The phase relationship between the DR voltage and the gate electrode voltage is defined so that the gate voltage lags the DR voltage by a predetermined time value. Preferably, the predetermined time delay equal to the transit time between the developer roll and the printhead of the highest electrostatically charged toner particle capable of overcoming electrostatic adhesion to the DR for the voltage condition used, which maximises the amount of toner deposited, a critical factor with the small time development window of TEP processes.

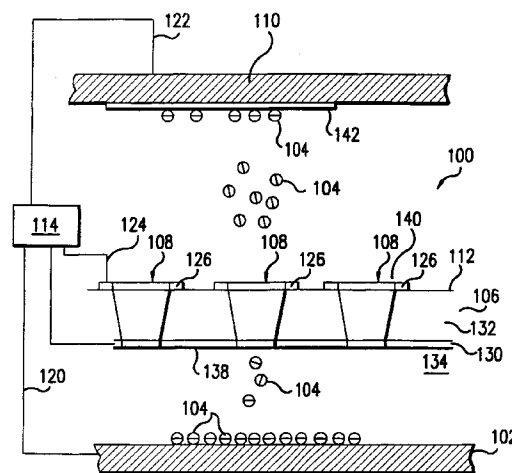


FIG.1



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EUROPEAN SEARCH REPORT

Application Number
EP 96 30 6538

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.6)
D,A	US 5 329 307 A (TAKEMURA OSAMU ET AL) 12 July 1994 * column 4, line 45 - column 7, line 30; figures 2,4 *	1,9	B41J2/415
A	US 5 231 427 A (OHASHI TSUYOSHI) 27 July 1993 * column 5, line 44 - line 65; figures 1,4 *	1,9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B41J G03G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 May 1997	Examiner De Groot, 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			

EPO FORM 1501 03.82 (P04C01)