

(19)



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(11)

**EP 0 658 827 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**28.05.1997 Bulletin 1997/22**

(51) Int Cl.<sup>6</sup>: **G03G 15/20**

(43) Date of publication A2:  
**21.06.1995 Bulletin 1995/25**

(21) Application number: **94309240.3**

(22) Date of filing: **12.12.1994**

(84) Designated Contracting States:  
**DE FR GB NL**

(30) Priority: **16.12.1993 IT TO930952**

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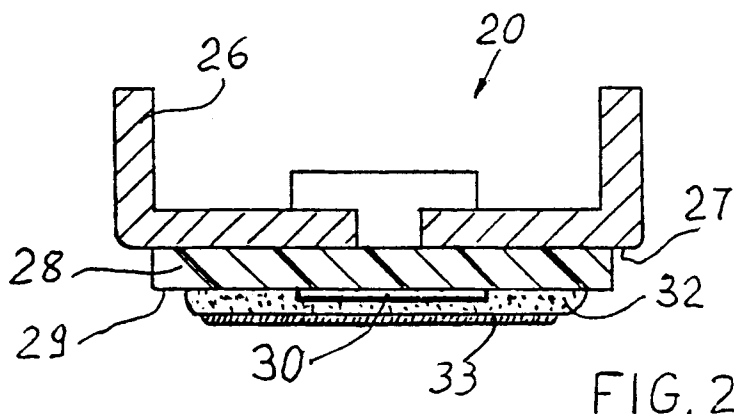
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(54) **Method of increasing the working life of a heating element of a fixing device and associated fixing device**

(57) Heating element (20) for a device for fixing images developed by means of toner (25) on a support (12). The element is characterised by a protective layer (33) of wear-resistant material based on carbon particles deposited on the said heating element by means of

growth by the vacuum deposition of carbon ions. The said protective layer also results in a reduced coefficient of friction between the said heating element and the film for conveying the said support across the said fixing unit, thereby increasing the working life of the said heating element.



**FIG. 2**

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# EUROPEAN SEARCH REPORT

Application Number  
EP 94 30 9240

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)
E	EP 0 632 344 A (CANON KK) 4 January 1995 * page 5, line 37 - line 43 * * page 8, line 9 - line 52; figure 3 * ---	1-11	G03G15/20
Y,D	EP 0 372 479 A (CANON KK) 13 June 1990  * column 15, line 14 - column 16, line 4; figure 9 * ---	1-6,10,11	
X	PATENT ABSTRACTS OF JAPAN vol. 016, no. 341 (P-1391), 23 July 1992 & JP 04 102882 A (RICOH CO LTD), 3 April 1992, * abstract *	7-9	
Y	---	1-6,10,11	
X	PATENT ABSTRACTS OF JAPAN vol. 013, no. 314 (P-899), 18 July 1989 & JP 01 084269 A (MINOLTA CAMERA CO LTD), 29 March 1989, * abstract * -----	7-9	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G03G
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		27 March 1997	Trepp, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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 ..... &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)