



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 385 865 A3

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **90400564.2**

(51) Int. Cl.⁵: **G03G 15/09**

(22) Date of filing: **28.02.90**

(30) Priority: **28.02.89 JP 46902/89**

(43) Date of publication of application:
05.09.90 Bulletin 90/36

(84) Designated Contracting States:
DE FR GB

(68) Date of deferred publication of the search report:
31.07.91 Bulletin 91/31

(71) Applicant: **FUJITSU LIMITED**
1015, Kamikodanaka Nakahara-ku
Kawasaki-shi Kanagawa 211(JP)

(72) Inventor: **Koshi, Makoto**
7-9-16 Arima, Miyamae-ku
Kawasaki-shi, Kanagawa 213(JP)
Inventor: **Oba, Hiroki**
10-57, Satsukigaoka, Midori-ku
Yokohama-shi, Kanagawa 227(JP)
Inventor: **Hida, Masayuki**
4-1-1-115 Hakusan, Asao-ku
Kawasaki-shi, Kanagawa 215(JP)

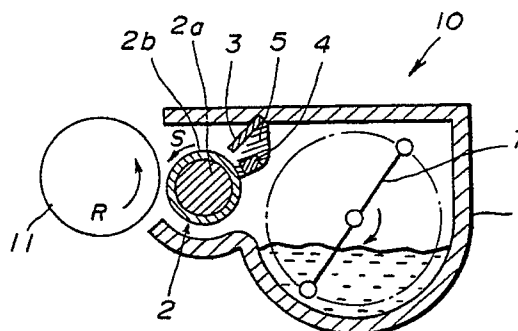
(74) Representative: **Joly, Jean-Jacques et al**
CABINET BEAU DE LOMENIE 55, rue
d'Amsterdam
F-75008 Paris(FR)

(54) **Developing unit and image forming apparatus having the developing unit.**

(57) A developing unit is used for supplying a developer to a photosensitive body (11) for visualizing an electrostatic image on the photosensitive body into a toner image. The developing unit comprises a developer hopper (1) for accommodating the developer which includes a toner and carriers which are magnetic, a rotatable developing roller (2) for supplying the developer within the developer hopper and comprising an inner magnet roll (2a) and a non-magnetic outer sleeve (2b) which has a peripheral surface on which the developer is carried, a doctor blade (3, 3A, 3B) which is provided in a vicinity of the developing roller and forms a predetermined gap between the peripheral surface of the outer sleeve so that a thickness of the developer on the peripheral surface of the outer sleeve is restricted to a predetermined thickness, and a carrier accumulating part (4, 4A, 4B) provided in a vicinity of the doctor blade on an upstream side of a direction in which the developer within the developer hopper generally flows. The carrier accumulating part interacts with the inner magnet roll of the devel-

oping roller and forms a magnetic field between the inner magnet roll, so that a developer accumulation formed in a vicinity of the doctor blade has a carrier concentration higher than that at other parts within the developer hopper.

FIG. 4



EP 0 385 865 A3



EUROPEAN SEARCH REPORT

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.5)
X,Y	US-A-4 676 192 (SHIZUO YUGE ET AL.) * column 2, line 66 - column 3, line 21 ** column 7, line 37 - column 8, line 61; figures 3, 6 *	1,2,5,10, 12,13,15, 16,18,20, 3	G 03 G 15/09
X,A	EP-A-0 219 233 (CANON K.K.) * page 4, line 26 - page 6, line 22 ** page 31, line 17 - page 32, line 16 @ page 40, line 10 - page 43, line 27 @ page 78, line 6 - page 82, line 24; figures 6, 10 *	1,2,4-6, 13,16,18, 20,14	
Y	EP-A-0 226 454 (CANON K.K.) * column 1, line 30 - column 2, line 58; figure 1 *	3	
A	US-A-4 606 990 (MASAO YOSHIKAWA) * column 3, line 24 - column 4, line 45; figure *	1,6,18,20	
A	PATENT ABSTRACTS OF JAPAN vol. 9, no. 167 (P-372)(1890) 12 July 1985, & JP-A-60 042767 (CANON K.K.) 7 March 1985, * the whole document *	1,6,18,20	
A,D	EP-A-0 139 020 (HITACHI) * pages 1 - 2; figures 1, 2 *	1,5,10,12	TECHNICAL FIELDS SEARCHED (Int. Cl.5) G 03 G
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of search 31 May 91	Examiner TREPP E.A.
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 O: non-written disclosure P: intermediate document 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			