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(71) Applicant: **CANON KABUSHIKI KAISHA**
Tokyo 146-8501 (JP)

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(72) Inventor: **TAKAHASHI, Kyosuke**
Tokyo, 146-8501 (JP)

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
19156376.6 / 3 534 218
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(74) Representative: **TBK**
Bavariaring 4-6
80336 München (DE)

(54) **DEVELOPING APPARATUS**

(57) The present invention relates to a developing apparatus, which comprises a developing container (2) configured to accommodate a developer containing toner and carrier; a developer carrying member (8) rotatably supported by the developing container (2) to carry the developer to a position for developing an electrostatic latent image formed on an image bearing member; a regulating portion (9) provided opposed to the developer carrying member (8) with a space therebetween to regulate an amount of the developer carried on the developer carrying member (8); and a magnet (8a) fixed inside of the developer carrying member (8) and having a plurality of magnetic poles to generate a magnetic field for the developer carrying member (8) to carry the developer. The plurality of magnetic poles include a developer regulation pole (N1) provided at a position opposed to the regulating portion (9). In a rotational direction of the developer carrying member (8), a half-peak center portion position is at a center of a half-peak width of a magnetic flux density distribution of the developer regulation pole (N1) in a normal direction component relative to the developer carrying member (8). The developer regulation pole (N1) is formed such that, in the rotational direction of the developer carrying member (8), the half-peak center portion position is not less than 3° upstream of a maximum peak position at which a magnetic flux density of the developer regulation pole (N1) in the normal direction component relative to the developer carrying member (8) is maximum, and in the rotational direction of the developer carrying member (8), a position at which the developer carrying member (8) is closest to the regulating portion (9)

is downstream of a position at which a magnetic flux density of the developer regulation pole (N1) in a tangential direction component relative to the developer carrying member (8) is zero.

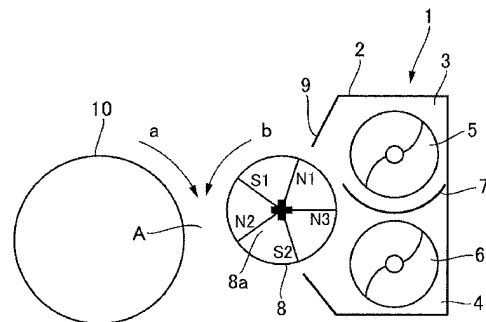


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2008/145107 A1 (MIYOSHI YASUO [JP]) 19 June 2008 (2008-06-19) * paragraph [0051]; figure 9 * -----	1-12	INV. G03G15/09 G03G15/08
A	WO 2013/162074 A1 (CANON KK) 31 October 2013 (2013-10-31) * paragraph [0115] - paragraph [0122]; figures 12-14 * -----	1-12	
A	JP 2003 140463 A (KONISHIROKU PHOTO IND) 14 May 2003 (2003-05-14) * abstract * * paragraph [0111] - paragraph [0116]; figure 6 * -----	1-12	
			TECHNICAL FIELDS SEARCHED (IPC)
			G03G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 February 2024	Examiner Rubio Sierra, F
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	

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 23 19 7384

5 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
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26-02-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008145107 A1	19-06-2008	JP 4861152 B2	25-01-2012
		JP 2008145968 A	26-06-2008
		US 2008145107 A1	19-06-2008
WO 2013162074 A1	31-10-2013	CN 104246623 A	24-12-2014
		CN 108549204 A	18-09-2018
		CN 109669337 A	23-04-2019
		EP 2842000 A1	04-03-2015
		EP 3518047 A1	31-07-2019
		JP 6049296 B2	21-12-2016
		JP 2013231853 A	14-11-2013
		KR 20150003300 A	08-01-2015
		US 2015010335 A1	08-01-2015
		WO 2013162074 A1	31-10-2013
JP 2003140463 A	14-05-2003	NONE	