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(54) Electrophotographic positively charged toner and manufacturing method thereof

(57) [Problem] To provide an electrophotographic positively charged toner and a manufacturing method thereof, according to which even if after kneading, pulverization and classification the toner is made spherical by melting the surfaces of the particles in a hot air current, the charge control agent is not coated and hence the charging ability thereof is not reduced, and thus the toner has sufficient tribo-charging ability for good image formation, excellent transfer efficiency, and excellent charge build-up performance and excellent charge sta-

bility upon continuous printing.

[Means of Solution] In the case of an electrophotographic positively charged toner comprising a core toner that has a binder resin, a wax, a colorant and a charge control agent as principal component materials thereof and has been spherified through heat treatment, and at least fine silica particles as an external additive, the charge control agent is made to contain a resin having a quaternary ammonium salt group as a functional group and a nigrosine dye.

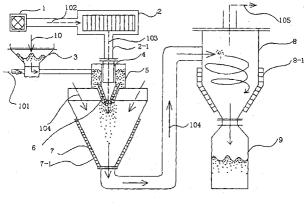


Fig. 1



EUROPEAN SEARCH REPORT

Application Number EP 03 02 6952

Category	Citation of document with indication	on, where appropriate,	Relevant	CLASSIFICATION OF THE		
Jalegory	of relevant passages		to claim	APPLICATION (Int.CI.7)		
Y	US 4 840 863 A (A OTSU) 20 June 1989 (1989-06-2 * column 3, line 23 - c * column 9, line 48 - l * column 10, line 34 -	20) column 9, line 27 * ine 57 *	1-6	G03G9/087 G03G9/08		
Υ	US 4 212 837 A (T OGUCH 15 July 1980 (1980-07-1 * claim 1; examples 1,4	.5)	1-6			
A	US 5 759 728 A (M HAGI) 2 June 1998 (1998-06-02 * claims 1,6; examples	?)	5			
				TECHNICAL FIELDS SEARCHED (Int.Cl.7)		
				G03G		
	The present search report has been di					
	The Hague	Date of completion of the search 23 November 2004	Van	Examiner hecke, H		
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category		E : earlier patent door after the filing date D : document cited in L : document cited for	T: theory or principle underlying the in E: earlier patent document, but publis after the filing date D: document cited in the application L: document cited for other reasons			
A : technological background O : non-written disclosure P : intermediate document		& : member of the same patent family, corresponding document				

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

EP 03 02 6952

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-11-2004

Patent document cited in search report	ļ	Publication date		Patent family member(s)		Publication date
US 4840863	А	20-06-1989	JP JP	2552133 63060458		06-11-19 16-03-19
US 4212837	А	15-07-1980	JP JP JP JP JP JP JP		A B C A B C A B	17-10-19 30-11-19 18-01-19 17-10-19 07-12-19 06-09-19 10-06-19 07-12-19 11-10-19 09-09-19
US 5759728	Α	02-06-1998	JP JP	3407526 9230620		19-05-20 05-09-19

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