US009410038B2

(12) **United States Patent**
Suenaga et al.

(10) **Patent No.: US 9,410,038 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **COMPOUND, INK, INK CARTRIDGE AND INK JET RECORDING METHOD**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 328 days.

(21) Appl. No.: **14/219,797**

(22) Filed: **Mar. 19, 2014**

(65) **Prior Publication Data**

US 2014/0285567 A1 Sep. 25, 2014

(30) **Foreign Application Priority Data**

Mar. 21, 2013 (JP) 2013-057563

(51) **Int. Cl.**

C09D 11/328	(2014.01)
C09B 11/12	(2006.01)
C09B 11/24	(2006.01)
C07D 311/82	(2006.01)
B41J 2/175	(2006.01)

(52) **U.S. Cl.**

CPC ***C09B 11/12*** (2013.01); ***B41J 2/17503*** (2013.01); ***C07D 311/82*** (2013.01); ***C09B 11/24*** (2013.01); ***C09D 11/328*** (2013.01)

(58) **Field of Classification Search**

CPC C09D 11/328; C09B 11/12; C09B 11/24; C07D 311/82; B41J 2/17503

USPC 106/31.43; 549/388, 394; 347/20, 86

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,083,667	B2 *	8/2006	Murai	C09D 11/328 106/31.43
7,141,342	B2 *	11/2006	Toyoda	G03G 9/0806 430/108.14
7,176,317	B2 *	2/2007	Banning	C09B 11/12 546/196
8,343,269	B2 *	1/2013	Takahashi	C09D 11/328 106/31.43
2011/0067598	A1 *	3/2011	Takahashi	C09B 11/24 106/31.43
2014/0004458	A1 *	1/2014	Tani	C09B 11/24 430/108.21
2014/0005417	A1 *	1/2014	Takahashi	C07D 311/82 549/394

FOREIGN PATENT DOCUMENTS

CN	1576278	A	2/2005
CN	102020866	A	4/2011
EP	2302001	A1	3/2011
GB	1503380	*	3/1978
JP	09/157562	*	6/1997
JP	H09-241553	A	9/1997
JP	2008-094897	A	4/2008
JP	2011-012143	A	1/2011
JP	2011-132275	A	7/2011
JP	2011-148973	A	8/2011
JP	2012-193308	A	10/2012
WO	2012/124791	A1	9/2012
WO	2012/124792	A1	9/2012

* cited by examiner

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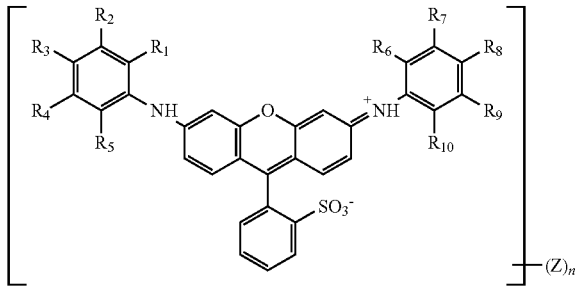
(57) **ABSTRACT**

There are provided a new compound which has the following general formula (1) and which is useful as a coloring material, an ink containing the compound, an ink cartridge containing the ink and an ink jet recording method including ejecting the ink from a recording head of an ink jet system to record an image on a recording medium.

general formula (1)



12 Claims, 6 Drawing Sheets