US009409881B2

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

(10) **Patent No.: US 9,409,881 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **HERBICIDALLY ACTIVE 6'-PHENYL-2,2'-BIPYRIDINE-3-CARBOXYLIC ACID DERIVATIVES**

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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 0 days.

(21) Appl. No.: **14/418,469**

(22) PCT Filed: **Aug. 2, 2013**

(86) PCT No.: **PCT/EP2013/066334**
§ 371 (c)(1),
(2) Date: **Jan. 30, 2015**

(87) PCT Pub. No.: **WO2014/023670**
PCT Pub. Date: **Feb. 13, 2014**

(65) **Prior Publication Data**

US 2015/0307470 A1 Oct. 29, 2015

(30) **Foreign Application Priority Data**

Aug. 7, 2012 (EP) 12179518

(51) **Int. Cl.**
C07D 401/04 (2006.01)
A01N 43/40 (2006.01)

(52) **U.S. Cl.**
CPC ***C07D 401/04*** (2013.01); ***A01N 43/40*** (2013.01)

(58) **Field of Classification Search**
CPC C07D 401/04
USPC 546/257, 258; 514/334
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,752,324 A 6/1988 Thomas et al.

FOREIGN PATENT DOCUMENTS

EP 0222254 A2 5/1987
WO 9519358 A1 7/1995

OTHER PUBLICATIONS

International Search Report from corresponding PCT/EP2013/066334, mailed Sep. 4, 2013.
Bijeire et al., "A Total Synthesis of Subarine, a Marine Alkaloid Related to the Pyridoacridine Family", European Journal of Organic Chemistry, Bd. 2004, Nr. 9, May 1, 20014, pp. 1891-1893, XP055039082.

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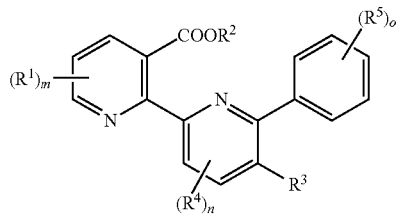
(57) **ABSTRACT**

There are described 6'-phenyl-2,2'-bipyridine-3-carboxylic acid derivatives of the general formula (I) as herbicides.

(I)



In this formula (I), R^1 to R^5 are radicals such as hydrogen, organic radicals such as alkyl, and other radicals such as halogen, nitro, cyano and formyl.

11 Claims, No Drawings