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(12) **United States Patent**
Sun

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(54) **RATCHET HANDLE**

(56) **References Cited**

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U.S. PATENT DOCUMENTS

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4,862,775 A	9/1989	Chow	
7,114,415 B1 *	10/2006	Chiang	B25B 13/463 81/60
7,162,937 B1 *	1/2007	Weng	B25B 13/463 81/63

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8,042,433 B2	10/2011	Chu	
8,485,069 B1 *	7/2013	Chen	B25B 13/463 81/60
9,032,845 B2 *	5/2015	Lin	B25B 13/463 81/61

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2006/0156868 A1 *	7/2006	Chen	B25B 13/463 81/63.2
2014/0208897 A1 *	7/2014	Kao	B25B 13/463 81/63

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FOREIGN PATENT DOCUMENTS

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CN	2504039 Y	8/2002
CN	2510240 Y	9/2002
CN	101672567 A	3/2010

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* cited by examiner

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(57) **ABSTRACT**

(30) **Foreign Application Priority Data**

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A ratchet handle includes a detent. A front part of the detent has a first meshing portion and a second meshing portion to mesh with a ratchet gear. An accommodation recess is provided between the first meshing portion and the second meshing portion. An auxiliary member is provided in the accommodation recess. The auxiliary member has a curved surface corresponding to an outer contour of the ratchet gear. The ratchet handle further includes an operating device. The operating device is operated to turn the detent so as to control the first meshing portion or the second meshing portion to mesh with the ratchet gear. The detent of the present invention is turned with less noise and moved stably.

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B25B 13/46 (2006.01)

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

CPC **B25B 13/463** (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

10 Claims, 7 Drawing Sheets

