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(54) METHOD FOR SMOOTHING SURFACE OF COPPER FOIL AND COPPER FOIL OBTAINED

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(56) References Cited

U.S. PATENT DOCUMENTS

7,112,271 2003/0155255			Jo et al. Yahalom	C25F 3/22
2008/0067077	A1*	3/2008	Kodera	205/640 B23H 5/08 205/684

FOREIGN PATENT DOCUMENTS

CN	110699749	11/2020	
CN	112921389	6/2021	
CN	115386926	11/2022	
EP	1167585 A2	* 1/2002	 C25F 3/02
TW	201343029	10/2013	

OTHER PUBLICATIONS

"Office Action of Taiwan Counterpart Application", issued on Oct. 11, 2023, p. 1-p. 8.

"Office Action of Taiwan Counterpart Application", issued on Mar. 21, 2025, p. 1-p. 7.

* cited by examiner

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(57) ABSTRACT

A method for smoothing surfaces of a copper foil and the copper foil obtained are provided, wherein the method for smoothing surfaces of the copper foil includes the following steps. Supplied with a copper foil. A first electropolishing process is performed on the copper foil. The copper foil is subjected to a pickling process. A second electropolishing process is performed on the copper foil.

9 Claims, 1 Drawing Sheet

