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**Guo et al.**

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(54) **STABILIZING DEVICE OF ELEVATOR CAR**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

791,950 A \* 6/1905 Seyffarth ..... B66B 5/18 187/370  
3,077,953 A \* 2/1963 Sahlin ..... B66B 7/047 187/409

(Continued)

FOREIGN PATENT DOCUMENTS

CN 205397800 U 7/2016  
EP 1367017 B1 5/2010

(Continued)

OTHER PUBLICATIONS

European Search Report for application EP 17188478.6, dated Jan. 22, 2018, 6 pages.

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(57) **ABSTRACT**

A stabilization apparatus of an elevator car includes: a base fixedly mounted with respect to the elevator car; an upper swing arm and a lower swing arm disposed in parallel basically, first ends thereof being pivotably fixed to the base; a guide rail frictional member capable of generating, with the guide rail, a frictional force for keeping static with respect to the guide rail, and having a first connecting shaft and a second connecting shaft for being connected to the upper swing arm and the lower swing arm respectively; and a damper having at least one end connected to the upper swing arm or the lower swing arm, wherein the damper is configured to at least partially prevent the upper swing arm and the lower swing arm from relatively swinging, with the first connecting shaft and/or the second connecting shaft as a swinging pivot.

**25 Claims, 10 Drawing Sheets**

