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**Woods**

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- (54) **SURFACE-CLEANING DEVICE**
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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.  
  
This patent is subject to a terminal disclaimer.

(56) **References Cited**  
**U.S. PATENT DOCUMENTS**

5,432,970 A 7/1995 Reid  
6,338,013 B1 1/2002 Ruffner

(Continued)

**FOREIGN PATENT DOCUMENTS**

CN 101301186 11/2008  
EP 2422675 2/2012  
KR 1020100123585 11/2010

**OTHER PUBLICATIONS**

International Search Report and Written Opinion for PCT Application No. PCT/US2012/066678 issued Jul. 18, 2013 which claims to the same priority as the instant application; 5 pgs. KR10-2009-0042785 (filed May 15, 2009) on the ISR is the application number of publication No. KR10-2010-0123585 published on Nov. 24, 2010.

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- (63) Continuation of application No. 13/671,125, filed on Nov. 7, 2012, now Pat. No. 9,161,612.
- (60) Provisional application No. 61/565,268, filed on Nov. 30, 2011.

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USPC ..... 15/21.1, 52.1, 49.1, 319  
See application file for complete search history.

(57) **ABSTRACT**

A device for cleaning a surface (e.g., a barbecue grill, etc.) generally includes an enclosure having at least a lower side, an upper side, and a peripheral edge. The device includes a plurality of motors each having a rotational shaft selectively fixable with a rotatable brush. At least a portion of bristles of each brush projects below a plane of the lower side of the enclosure. The device also includes a circuit adapted for connecting power from a power source to each of the motors for a preset period of time upon actuation of an electrical switch connected thereto. The circuit is adapted to run each motor in a first direction and then an opposing direction, such that if the device becomes stuck at an obstruction, it will eventually turn around due to the alternating directions of the motors.

**20 Claims, 8 Drawing Sheets**

