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Howard

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(54) **PASTEURIZATION SYSTEM FOR ROOT VEGETABLES**

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See application file for complete search history.

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(56) **References Cited**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

U.S. PATENT DOCUMENTS

2,910,392 A * 10/1959 Magnuson 426/482
7,285,299 B1 * 10/2007 Howard 426/129
2012/0015084 A1* 1/2012 Howard 426/262

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FOREIGN PATENT DOCUMENTS

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BG 61328 6/1997
DE 2150338 4/1972
DE 3743950 7/1989
DE 4424430 1/1996
EP 1290954 3/2003
ES 2238143 8/2005
WO 9923894 5/1999
WO 2009003545 1/2009

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* cited by examiner

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(57) **ABSTRACT**

A system and method for pasteurizing the surface of a food product includes a flame pasteurizing means arranged to transfer heat to an outer layer of the food product as it is carried by a cook belt. The flame pasteurizing means provides a medium that engulfs more than 50% of the surface area of the skin or outer layer and raises the temperature of the outer layer to at least 145° F. (about 62.8° C.). A washing means, arranged at an exit point of the flame pasteurizing means, removes the raised temperature outer layer and stops heat transfer to an adjacent inner layer of the food product. The pasteurized and washed product retains the same color and flavor as that of the unpasteurized product.

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

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