



US009445689B1

(12) **United States Patent**
Howard et al.

(10) **Patent No.:** **US 9,445,689 B1**
(45) **Date of Patent:** **Sep. 20, 2016**

(54) **TRANSFER MECHANISM FOR A
CONTINUOUS HEAT TRANSFER SYSTEM**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(71) Applicant: **Unitherm Food Systems, Inc.**, Bristow, OK (US)

3,815,727 A * 6/1974 Hartwig B65G 47/76
198/637

(72) Inventors: **David Howard**, Bristow, OK (US);
Austen Laur, Tulsa, OK (US)

3,853,212 A * 12/1974 Downes B65G 43/02
198/572

(73) Assignee: **Unitherm Food Systems, Inc.**, Bristow, OK (US)

5,592,870 A * 1/1997 Sanchez A21C 5/00
99/353

5,597,062 A * 1/1997 Biwer B65G 47/66
198/600

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

7,506,750 B2 * 3/2009 Costanzo B65G 17/24
198/600

7,648,020 B2 * 1/2010 Dickover B65G 43/00
186/68

2006/0163039 A1 * 7/2006 Marshall B65G 15/54
198/778

* cited by examiner

(21) Appl. No.: **14/733,377**

Primary Examiner — Leslie A Nicholson, III

Assistant Examiner — Keith R Campbell

(22) Filed: **Jun. 8, 2015**

(74) *Attorney, Agent, or Firm* — GableGotwals

(51) **Int. Cl.**

A47J 37/04 (2006.01)

B65G 47/76 (2006.01)

B65G 47/66 (2006.01)

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

CPC **A47J 37/049** (2013.01); **B65G 47/66** (2013.01); **B65G 47/766** (2013.01)

(58) **Field of Classification Search**

CPC B65G 45/16; B65G 47/66; B65G 47/769; B65G 47/766; A21B 1/48; A47J 37/045; A47J 37/049

USPC 198/499, 600; 99/386, 443 C
See application file for complete search history.

(57) **ABSTRACT**

A transfer mechanism for use in a continuous cooking system includes a non-metallic counter-balance having a contact bar located toward its uppermost end and a load located toward its lowermost end. The contact bar is sized to span a useable width of the belt and the load is sized to urge the contact bar into continued contact with a portion of the belt as the belt travels around the end roller. A rotational joint is provided for pivoting the counter-balance toward and away from belt, the joint being arranged to provide a predetermined amount of travel relative to the belt. A slot is provided for adjusting a position of the counter-balance relative to the belt. The uppermost product-contact surface of the bar can be round, flat, or angled and can include grooves to reduce the amount of contact area.

19 Claims, 7 Drawing Sheets

