



US009975292B2

(12) **United States Patent**  
**Hull**

(10) **Patent No.:** **US 9,975,292 B2**

(45) **Date of Patent:** **\*May 22, 2018**

(54) **RETROFIT OF A FORM-FILL-SEAL  
MACHINE HEAT STATION WITH AN  
ADVANCED ULTRASONIC WELDING KIT**

(58) **Field of Classification Search**

CPC ..... B29C 65/08; B29C 66/8322; B29C  
66/81427; B29C 66/81433

(Continued)

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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. days.

This patent is subject to a terminal dis-  
claimer.

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(21) Appl. No.: **15/492,181**

(22) Filed: **Apr. 20, 2017**

(65) **Prior Publication Data**

US 2017/0232661 A1 Aug. 17, 2017

**Related U.S. Application Data**

(63) Continuation of application No. 14/056,050, filed on  
Oct. 17, 2013, now Pat. No. 9,662,829, which is a  
(Continued)

(51) **Int. Cl.**  
**B32B 37/00** (2006.01)  
**B29C 65/08** (2006.01)

(Continued)

(52) **U.S. Cl.**  
CPC ..... **B29C 65/08** (2013.01); **B29C 66/1122**  
(2013.01); **B29C 66/43121** (2013.01);  
(Continued)

(57) **ABSTRACT**

Advanced ultrasonic welding components of Applicant's U.S. Pat. No. 8,376,016 are readily incorporated into new form-fill-seal machines, but owners of existing machines utilizing heat-seal stations were unsuccessful at swapping the sealing packages. Retrofit kits to a replace heat sealing stations with an advanced ultrasonic sonotrode and anvil comprise: a housing; a linear rail fixed thereto; first and second bearing carriages being slidable upon the rail; and first and second fluidic muscles. Each of the fluidic muscles is mounted with a first end fixed to a respective housing wall, and a second end fixed to a respective bearing carriage, permitting actuation of each carriage through pressurization/depressurization of the muscles. The advanced anvil and sonotrode may be secured to respective carriages. In-line arrangements of anvil/sonotrode, bearing carriages, the first fluidic and second fluidic muscles provides a narrow profile, permitting side-by-side kit installations for retrofits accomplishing duplex sealing on a horizontal machine.

**5 Claims, 13 Drawing Sheets**

