



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

(10) **Patent No.:** **US 9,409,374 B2**  
(45) **Date of Patent:** **Aug. 9, 2016**

(54) **DOUBLE FACER, AND METHOD AND DEVICE FOR GLUING THEREOF**

(75) Inventors: **Kazuhito Ohira**, Mihara (JP); **Kazuki Mizushima**, Mihara (JP)

(73) Assignee: **MITSUBISHI HEAVY INDUSTRIES PRINTING & PACKAGING MACHINERY, LTD.**, Mihara-Shi, Hiroshima (JP)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 678 days.

(21) Appl. No.: **13/578,162**

(22) PCT Filed: **Mar. 23, 2011**

(86) PCT No.: **PCT/JP2011/056869**

§ 371 (c)(1),  
(2), (4) Date: **Aug. 9, 2012**

(87) PCT Pub. No.: **WO2011/125487**

PCT Pub. Date: **Oct. 13, 2011**

(65) **Prior Publication Data**

US 2013/0017941 A1 Jan. 17, 2013

(30) **Foreign Application Priority Data**

Apr. 7, 2010 (JP) ..... 2010-088933

(51) **Int. Cl.**  
**B05C 1/00** (2006.01)  
**B31F 1/28** (2006.01)

(52) **U.S. Cl.**  
CPC ..... **B31F 1/2818** (2013.01)

(58) **Field of Classification Search**  
CPC ..... B05D 5/00; B29C 66/22; B29C 66/223; B21B 37/00; B31F 1/2818; B31F 1/2813  
USPC ..... 156/494, 470; 493/336  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,827,873 A 3/1958 Thorn  
3,520,276 A \* 7/1970 Martin Louis ..... B31F 1/2818  
118/262

(Continued)

FOREIGN PATENT DOCUMENTS

DE 20000178 U1 5/2000  
JP H05-18828 U 3/1993

(Continued)

OTHER PUBLICATIONS

Japan Patent Office, "Decision to Grant a Patent for JP2010-088933," Dec. 17, 2013.

(Continued)

*Primary Examiner* — Robert Long

*Assistant Examiner* — Xavier A Madison

(74) *Attorney, Agent, or Firm* — Manabu Kanesaka; Benjamin Hauptman; Kenneth Berner

(57) **ABSTRACT**

A device for gluing of a double facer includes a glue bath containing glue; a gluing roll immersed in and coated with the glue; a doctor roll adjusting the glue on the gluing roll to a predetermined thickness, transferred to a single faced corrugated cardboard; a swing roll disposed at an upstream portion of a transferring direction of the corrugated cardboard; and a moving device that moves the swing roll in a direction that the single faced corrugated cardboard is wrapped around the gluing roll. The swing roll is wrapped around the single faced corrugated cardboard, and the number of flute tips of the single faced corrugated cardboard that are concurrently contacting with the gluing roll and applied with the glue is adjusted by moving only the swing roll in such a direction that crosses a sheet face of the single faced corrugated cardboard passing through the nip.

**18 Claims, 3 Drawing Sheets**

