



US010994520B2

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

(10) **Patent No.:** **US 10,994,520 B2**

(45) **Date of Patent:** **May 4, 2021**

(54) **DECORATED DENTAL APPLIANCES AND METHODS FOR PRODUCING SAME**

(71) Applicant: **DentaGrafix, LLC**, Livingston, NJ (US)
(72) Inventors: **Eric Marshall Sacks**, Livingston, NJ (US); **Matthew Fischer**, West Orange, NJ (US)

(73) Assignee: **DentaGrafix, LLC**, Livingston, NJ (US)

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

(21) Appl. No.: **16/784,113**

(22) Filed: **Feb. 6, 2020**

(65) **Prior Publication Data**
US 2020/0254739 A1 Aug. 13, 2020

Related U.S. Application Data
(60) Provisional application No. 62/802,292, filed on Feb. 7, 2019.

(51) **Int. Cl.**
B32B 3/00 (2006.01)
B32B 27/08 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC **B32B 27/08** (2013.01); **A61C 7/08** (2013.01); **B32B 27/32** (2013.01); **B32B 27/36** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B32B 27/08; B32B 27/10; B32B 27/32; B32B 27/36; A61C 7/08
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,311,520 A * 3/1967 Michaelson B32B 37/00 156/209
6,293,790 B1 * 9/2001 Hilliard A61C 7/04 101/3.1

(Continued)

FOREIGN PATENT DOCUMENTS

CN 102950950 A 3/2013

OTHER PUBLICATIONS

International Search Report and Written Opinion issued by the Korean Intellectual Property Office dated Jun. 8, 2020 in International Patent Application No. PCT/US2020/017076 filed Feb. 6, 2020.

Primary Examiner — Elizabeth E Mulvaney
(74) *Attorney, Agent, or Firm* — Greenberg Traurig, LLP

(57) **ABSTRACT**

A method includes the steps of providing a disk, wherein the disk has a first side, a second side opposite the first side, and a profile, and wherein the disk includes an FDA-compliant plastic material that is configured to be formed into a dental appliance; providing a graphic part, wherein the graphic part includes: a first carrier film, and a graphic disposed on the first carrier film, providing a heat stamping press having a lower platen and an upper platen; positioning the disk on the lower platen; positioning the graphic part on the disk such that the graphic of the graphic part contacts a portion of the first side of the disk; and heat stamping the disk and the graphic part with the heat stamping press, thereby causing the graphic to fuse with the disk to produce a decorated disk.

11 Claims, 13 Drawing Sheets

