

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 March 2022 (03.03.2022)



(10) International Publication Number
WO 2022/047115 A1

(51) International Patent Classification:

B31B 50/00 (2017.01) *B31B 105/00* (2017.01)
B65B 31/04 (2006.01)

(21) International Application Number:

PCT/US2021/047883

(22) International Filing Date:

27 August 2021 (27.08.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/071,069 27 August 2020 (27.08.2020) US

(71) Applicant: **SONOCO DEVELOPMENT, INC.** [US/US];
540 North Second Street, Hartsville, SC 29550 (US).

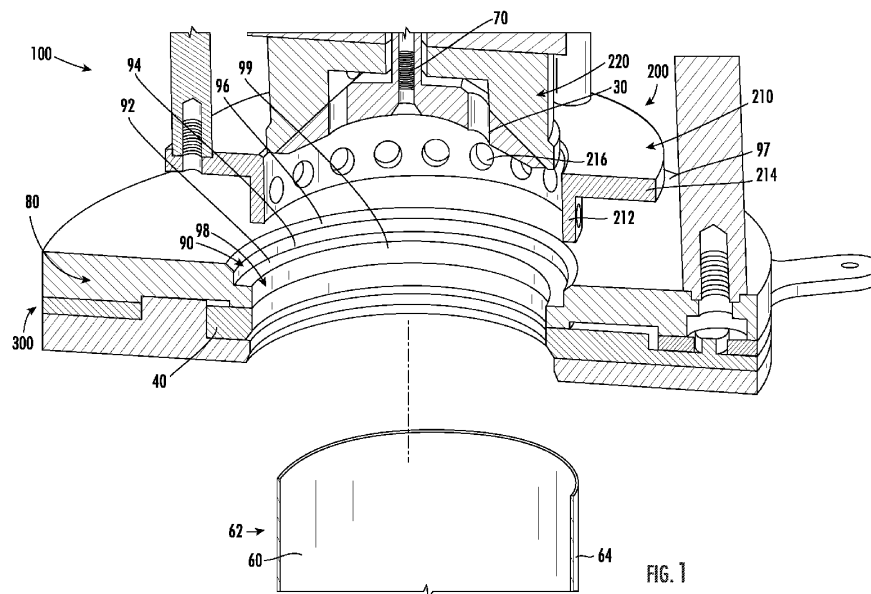
(72) Inventors: **HATJE, Dirk**; Wotenstrasse 16, 68305
Mannheim (DE). **GROSS, Danny**; Himmelfahrt 20, 08309
Eibenstock (DE).

(74) Agent: **HAYDEN, Nichole** et al.; Nelson Mullins Riley &
Scarborough LLP, One Wells Fargo Center, 301 South Col-
lege Street, 23rd Floor, Charlotte, NC 28202 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,
SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,

(54) Title: SYSTEMS AND METHODS FOR THE APPLICATION AND SEALING OF END CLOSURES ON CONTAINERS



(57) Abstract: The invention is directed to a system (100) and method for sealing a closure to a container comprising a die assembly (300), a mandrel assembly (200), and a gas evacuation assembly (400). The mandrel assembly comprises an outer mandrel (210) and an inner mandrel (220). The outer mandrel is configured to vertically translate and constrain a closure in position. The gas evacuation assembly, which comprises at least one hollow channel (430) within the die and one or more channel openings (440) into the interior of the die, suction gas from the interior of an aligned container when the closure is constrained in position. The inner mandrel translates vertically to insert the closure into the container and a sealing member (40) seals the closure in place.

[Continued on next page]

EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))