

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
23 July 2020 (23.07.2020)



(10) International Publication Number
WO 2020/149915 A3

(51) International Patent Classification:

G06F 30/17 (2020.01) G06F 113/22 (2020.01)
G06F 30/23 (2020.01) G06F 119/14 (2020.01)
B29C 70/30 (2006.01) G06F 119/18 (2020.01)
B29C 70/46 (2006.01) G06F 113/24 (2020.01)
B29C 70/54 (2006.01) G06F 113/26 (2020.01)
G06F 111/04 (2020.01)

(72) Inventors: **ESCOWITZ, Ethan**; 2418 Bonar St., Berkeley, California 94702 (US). **PERKINS, J. Scott**; 2743 Ninth Street, Berkeley, California 94710 (US). **REESE, Riley**; 1491 Chapparral Dr., Carpinteria, California 93013 (US). **DAVIDSON, Erick**; 114 Alta Ave., Piedmont, California 94611 (US). **HENNESSEE, Sean**; 301 Mission St Unit 57D, San Francisco, California 94105 (US).

(21) International Application Number:

PCT/US2019/058386

(74) Agent: **BREYER, Wayne S.**; Kaplan Breyer Schwarz, LLP, 90 Matawan Road, Suite 201, Matawan, New Jersey 07747 (US).

(22) International Filing Date:

28 October 2019 (28.10.2019)

(25) Filing Language:

English

(26) Publication Language:

English

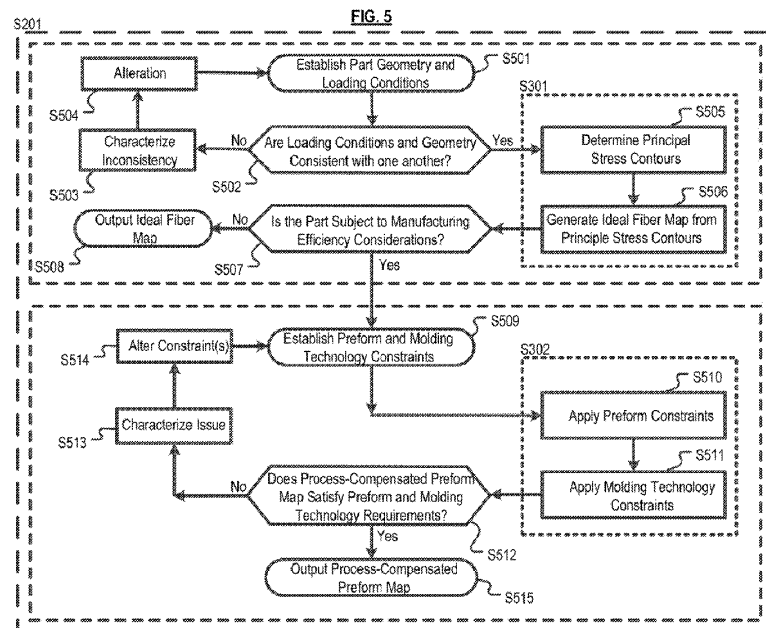
(30) Priority Data:

62/751,040 26 October 2018 (26.10.2018) US
16/666,191 28 October 2019 (28.10.2019) US

(71) Applicant: **ARRIS COMPOSITES INC.** [US/US]; 2743 Ninth Street, Berkeley, California 94710 (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, 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,

(54) Title: METHOD FOR THE DESIGN AND EFFICIENT MANUFACTURE OF FIBER-COMPOSITE PARTS



(57) Abstract: A method for designing fiber-composite parts in which part performance and manufacturing efficiency can be traded-off against one another to provide an "optimized" design for a desired use case. In some embodiments, the method involves generating an idealized fiber map, wherein the orientation of fibers throughout the prospective part align with the anticipated load conditions throughout the part, and then modifying the idealized fiber map by various fabrication constraints to generate a process-compensated preform map.

[Continued on next page]

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, 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))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

01 October 2020 (01.10.2020)