



(51) International Patent Classification:
G06F 17/50 (2006.01) **B32B 5/14** (2006.01)
B33Y 50/00 (2015.01) **B32B 3/12** (2006.01)

(21) International Application Number:
PCT/SG2017/050637

(22) International Filing Date:
21 December 2017 (21.12.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10201610776X 22 December 2016 (22.12.2016) SG

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(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, 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).

(54) Title: METHOD AND SYSTEM OF MANUFACTURING A LOAD-BEARING STRUCTURE AND A LOAD-BEARING STRUCTURE MANUFACTURED THEREOF

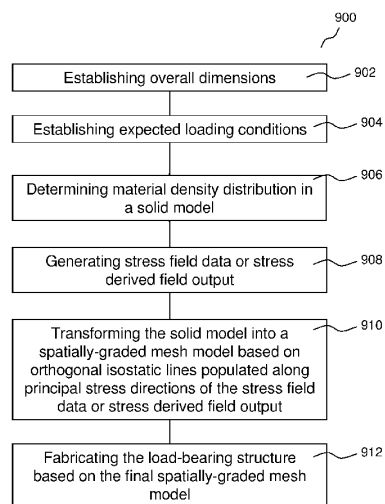


FIG. 9

(57) Abstract: A method of manufacturing a load-bearing structure. The method may include establishing overall dimensions and expected loading conditions of the load-bearing structure; determining a material density distribution within a solid model for the load-bearing structure based on the overall dimensions and the expected loading conditions for a predetermined objective end constraint; generating stress field data for the determined material density distribution based on the expected loading conditions; transforming the solid model into a spatially-graded mesh model having a plurality of three-dimensional cells based on orthogonal isostatic lines populated along principal stress directions of the stress field data;; and fabricating the load-bearing structure with truss members aligned according to the spatially-graded mesh model. A system for manufacturing a load-bearing structure and a load-bearing structure manufactured thereof.

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE