

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
21 October 2021 (21.10.2021)



(10) International Publication Number
WO 2021/211062 A1

- (51) **International Patent Classification:**
A61F 2/24 (2006.01) *G06T 17/00* (2006.01)
- (21) **International Application Number:**
PCT/SG2021/050212
- (22) **International Filing Date:**
15 April 2021 (15.04.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
10202003458Y 15 April 2020 (15.04.2020) SG
- (71) **Applicants:** NATIONAL UNIVERSITY OF SINGAPORE [SG/SG]; 21 Lower Kent Ridge Road, Singapore 119077 (SG). NATIONAL UNIVERSITY HOSPITAL (SINGAPORE) PTE LTD [SG/SG]; 1E Kent Ridge Road, #13-00, Singapore 119228 (SG).
- (72) **Inventor:** KOFIDIS, Theodoros; c/o National University of Singapore, Yong Loo Lin School of Medicine / Department of Surgery, 1E Kent Ridge Road, Level 8, NUHS Tower Block, Singapore 119228 (SG).
- (74) **Agent:** SOROKER AGMON NORDMAN PTE LTD; 111 Somerset Road, #09-14, Singapore 238164 (SG).
- (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, 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))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

(54) **Title:** A METHOD FOR MANUFACTURING PERSONALIZED NATURALLY DESIGNED MITRAL PROSTHESIS

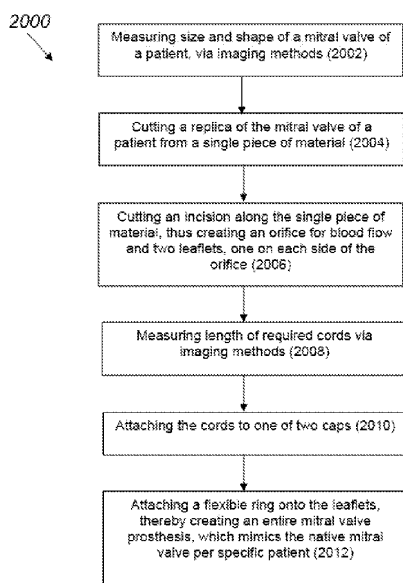


FIG. 19

(57) **Abstract:** A personalized naturally designed mitral valve prosthesis and a method for manufacturing the such to precisely fit a specific patient for which the valve prosthesis is made for, is provided. The method includes measuring size and shape of a mitral valve of the specific patient by using imaging means, building a 3D model of the personalized mitral valve prosthesis, optimizing the 3D model using FEM method and fabricating the personalized mitral valve prosthesis by cutting and connecting the annular ring, leaflets and chords to form a personalized prosthesis mitral valve.