

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
12 August 2021 (12.08.2021)



(10) International Publication Number
WO 2021/156168 A1

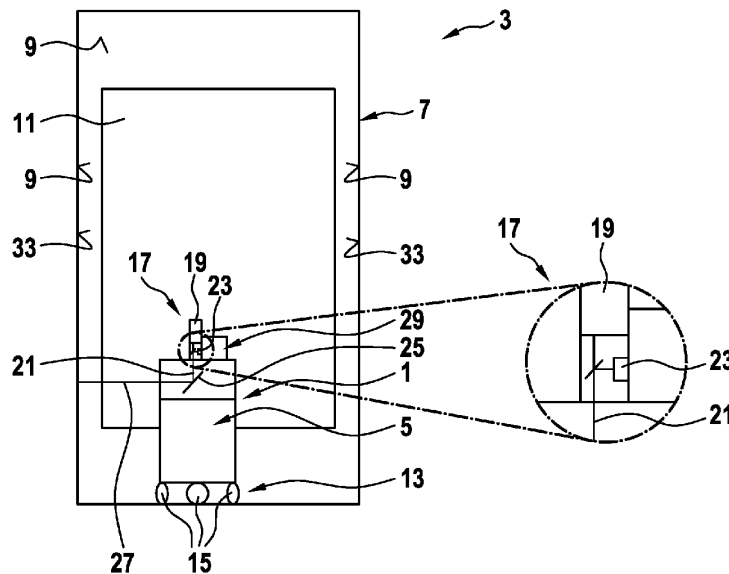
- (51) **International Patent Classification:**
B66B 5/00 (2006.01) *G01S 17/89* (2020.01)
- (21) **International Application Number:**
PCT/EP2021/052240
- (22) **International Filing Date:**
01 February 2021 (01.02.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
20155774.1 06 February 2020 (06.02.2020) EP
- (71) **Applicant:** INVENTIO AG [CH/CH]; Seestrasse 55, 6052 Hergiswil (CH).
- (72) **Inventors:** ARANDES VILAGRASA, Roc; Carrer de la Baladruga, 4, 25243 El Palau d'Anglesola (ES). CHIAP-

PA, Alberto; Rue du Centre 166, 1025 Saint-Sulpice (CH). GUIDETTI, Xavier; Chemin de l'église 3, 1026 Echandens (CH). KUSSEROW, Martin; Bodenhofstrasse 11, 6005 Luzern (CH). PAVLIV, Maxim; Rte des Crêts-Leyron 28, 1091 Grandvaux (CH). RENAUD, Louis-Dominique; 65 Quai de la Seine, 75019 Paris (FR).

(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.

(54) **Title:** METHOD AND DEVICE FOR DETERMINING ESTIMATED REAL DIMENSIONS OF AN ELEVATOR CAR

Fig. 1



(57) **Abstract:** A method for determining estimated real dimensions of an elevator car (7) and a computing unit (29) for executing such method are described. The method comprises following steps: (a) acquiring a virtual 2-dimensional map of the elevator car (7) based on data provided by a lidar sensor (17), the virtual 2-dimensional map representing reflection surfaces (33) from which laser light emitted by the lidar sensor (17) is reflected, (b) defining a starting area as a rectangular area at a position located within the real dimensions of the elevator car (7), (c) successively extending the rectangular area by one pixel in each of four extension directions orthogonal to edges of the rectangular area, including, in case any pixel in one of the extension directions corresponds to one of the reflection surfaces (33) indicated in the virtual 2-dimensional map, stopping extending the rectangular area in this extension direction and successively extending the rectangular area by one pixel only in each of the remaining extension directions, until having fully

[Continued on next page]

(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).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

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

extended the rectangular area to a maximum in each of the extension directions, and (d) determining the fully extended rectangular area as the estimated real dimensions of the elevator car (7).