



(51) International Patent Classification:

H02S 20/32 (2014.01) *F24S 25/67* (2018.01)
F24S 40/20 (2018.01) *B25J 5/04* (2006.01)
H02S 20/30 (2014.01) *E01B 25/24* (2006.01)
H02S 40/10 (2014.01)

(21) International Application Number:

PCT/US2023/070236

(22) International Filing Date:

14 July 2023 (14.07.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/389,016 14 July 2022 (14.07.2022) US
63/526,485 13 July 2023 (13.07.2023) US

(71) Applicant: **EVERMORE UNITED S.A.**; Morgan & Morgan Building, Passsea Estate, Road Town, Tortola (VG).

(71) Applicant (for LS only): **TANG, Qinan** [US/US]; 734 Almar Ave, Los Angeles, CA 90272 (US).

(72) Inventor: **MAGNER, Yoni**; c/o Evermore United S.A., Morgan & Morgan Building, Passsea Estate, Road Town, Tortola (VG).

(74) Agent: **BRUESS, Steven, C.** et al.; Merchant & Gould P.C., P.O. Box 2903, Minneapolis, MN 55402-0903 (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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,

(54) Title: RAIL BRIDGE FOR SOLAR PANEL SERVICE VEHICLE WITH DETACHMENT RECOVERY

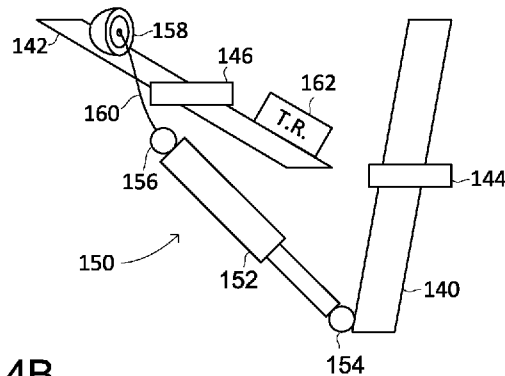


FIG. 4B

(57) Abstract: Self-recoupling detachable hinge mechanism, coupled between a first tracking solar panel array and a second tracking solar panel array, the hinge mechanism including a solar panel rail bridge having an adjustable length, a detachable hinge, a detachable socket, a cable and at least one tension retainer, the rail bridge being coupled between the first array and the second array, the detachable hinge being coupled with either the second side of the rail bridge or the second array, the detachable socket being respectively coupled with either the second array or the second side of the rail bridge, the cable being coupled between the detachable hinge and the detachable socket and the tension retainer being coupled with the cable, the detachable socket being configured for detaching from and recoupling with the detachable hinge and the tension retainer for maintaining tension across the cable between the detachable hinge and the detachable socket.



LU, LV, MC, ME, 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:

07 March 2024 (07.03.2024)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 23/70236

A. CLASSIFICATION OF SUBJECT MATTER IPC - INV. H02S 20/32, F24S 40/20, H02S 20/30, H02S 40/10, F24S 25/67 (2023.01) ADD. B25J 5/04, E01B 25/24 (2023.01) CPC - INV. H02S 20/32, F24S 25/67, F24S 40/20, H02S 20/30, H02S 40/10 ADD. B25J 5/04, E01B 25/24, F24S 2025/017, F24S 2030/12, F24S 2030/145, F24S 2030/16 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) See Search History document Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched See Search History document Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) See Search History document		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 210899066 U (NANJING TIANCHUANG ELECTRONIC TECHNOLOGY CO LTD) 30 June 2020 (30.06.2020) entire document	1-28
A	US 2022/0140776 A1 (NOMADD DESERT SOLAR SOLUTIONS PTE LTD) 05 May 2022 (05.05.2022) entire document	1-28
A	CN 111147011 A (NANJING TIANCHUANG ELECTRONIC TECHNOLOGY CO LTD) 12 May 2020 (12.05.2020) entire document	1-28
A	CN 112577545 A (HEFEI RENJIE INTELLIGENT TECH CO LTD) 30 March 2021 (30.03.2021) entire document	1-28
A	CN 114400967 A (NANJING TIANCHUANG ELECTRONIC TECHNOLOGY CO LTD) 26 April 2022 (26.04.2022) entire document	1-28
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 17 November 2023 (17.11.2023)		Date of mailing of the international search report JAN 23 2024
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Kari Rodriguez Telephone No. PCT Helpdesk: 571-272-4300