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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
03 October 2019 (03.10.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/185577 A3

(51) International Patent Classification:
B65G 1/04 (2006.01)

(21) International Application Number:
PCT/EP2019/057498

(22) International Filing Date:
26 March 2019 (26.03.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1804867.8 27 March 2018 (27.03.2018) GB

(71) Applicant: **OCADO INNOVATION LIMITED** [GB/GB]; 1 Trident Place Mosquito Way, Hatfield HERTS AL10 9UL (GB).

(72) Inventors: **CLARK, Sean**; Ocado Innovation Limited, The Legal Department 1 Trident Place, Mosquito Way, Hatfield Hertfordshire AL10 9UL (GB). **SHARP, David**; Ocado Innovation Limited The Legal Department, 1 Trident Place, Mosquito Way, Hatfield Hertfordshire AL10 9UL (GB).

(74) Agent: **LEVINE, Benjamin** et al.; Suite 31, West Devon Business Park Brook Lane, Tavistock Devon PL19 9DP (GB).

(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).

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))*

(54) Title: A TRANSPORTING DEVICE

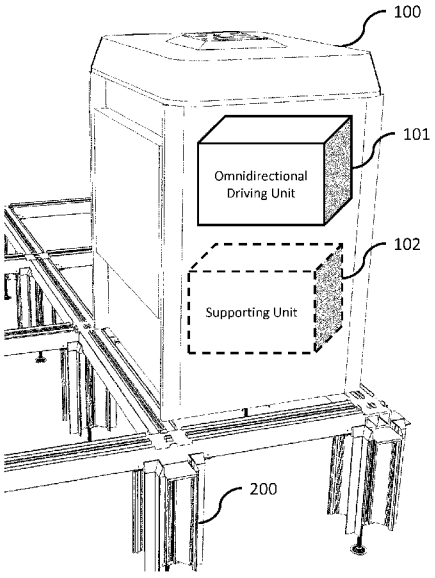


Figure 5

(57) Abstract: The present invention aims to provide an apparatus and method for a load handling system (1) such that direction change of the transporting device (100) is more easily and quickly realised. A transporting device (100) comprises an omnidirectional driving (101) unit which permits the transporting device (100) to more easily move in more than one direction. There is provided a transporting device arranged to transport a container (10), the container being stored in a facility, the facility arranged to store the container (10) in a plurality of stacks, the facility comprising a plurality of pathways(22 22a) arranged in cells so as to form a grid-like structure above the stacks, wherein the grid-like structure extends in a first direction and in a second direction, the transporting device arranged to operate on the grid-like structure. The transporting device comprises an omnidirectional driving unit (101) arranged to drive the transporting device (100) in the first direction and/or the second direction.

WO 2019/185577 A3

[Continued on next page]

WO 2019/185577 A3

(88) Date of publication of the international search report:
07 November 2019 (07.11.2019)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/057498

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65G1/04
ADD.

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)
B65G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	DE 10 2016 003665 A1 (SEW-EURODRIVE GMBH & CO KG [DE]) 6 October 2016 (2016-10-06) the whole document	1,6-12 2-5, 13-15
Y	US 9 573 416 B1 (NIEMEYER GUNTER D [US] ET AL) 21 February 2017 (2017-02-21) claims; figures	2-5,15
Y	GB 2 541 775 A (OCADO INNOVATION LTD [GB]) 1 March 2017 (2017-03-01) figures 1-4	13,14
A	EP 3 050 824 A1 (JAKOB HATTELAND LOGISTICS AS [NO]) 3 August 2016 (2016-08-03) the whole document	1,13

-/--

[X] Further documents are listed in the continuation of Box C.

[X] 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

"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	Date of mailing of the international search report
1 August 2019	08/10/2019

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Haaken, Willy

3

Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 088 232 A (LILLY GEORGE E) 9 May 1978 (1978-05-09) the whole document -----	1,13
A	EP 2 308 777 A1 (ICAM S R L [IT]) 13 April 2011 (2011-04-13) paragraph [0016] - paragraph [0021] -----	1,13

3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2019/057498

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15

   Transporting device with omnidirectional driving unit and related method

   ---

2. claims: 16-23

   Storage system comprising a rail arrangement and related method

   ---

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2019/057498

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102016003665 A1	06-10-2016	CN 107438571 A	05-12-2017
		DE 102016003665 A1	06-10-2016
		EP 3277519 A1	07-02-2018
		US 2018086560 A1	29-03-2018
		WO 2016155862 A1	06-10-2016
US 9573416	B1 21-02-2017	NONE	
GB 2541775	A 01-03-2017	NONE	
EP 3050824	A1 03-08-2016	AU 2016212290 A1	10-08-2017
		BR 112017016049 A2	03-04-2018
		CA 2974048 A1	04-08-2016
		CN 107428464 A	01-12-2017
		DK 3250481 T3	08-04-2019
		EA 201791581 A1	31-01-2018
		EP 3050824 A1	03-08-2016
		EP 3250481 A1	06-12-2017
		EP 3447007 A1	27-02-2019
		ES 2716631 T3	13-06-2019
		JP 2018504337 A	15-02-2018
		KR 20170108983 A	27-09-2017
		PL 3250481 T3	31-07-2019
		SG 11201706044W A	30-08-2017
		TW 201637968 A	01-11-2016
		US 2017355524 A1	14-12-2017
		US 2019179295 A1	13-06-2019
		WO 2016120075 A1	04-08-2016
US 4088232	A 09-05-1978	NONE	
EP 2308777	A1 13-04-2011	NONE	