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**Declarations under Rule 4.17:**

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

(54) Title: AN AUTOMATED STORAGE AND RETRIEVAL SYSTEM COMPRISING A STORAGE CONTAINER LIFT ASSEMBLY

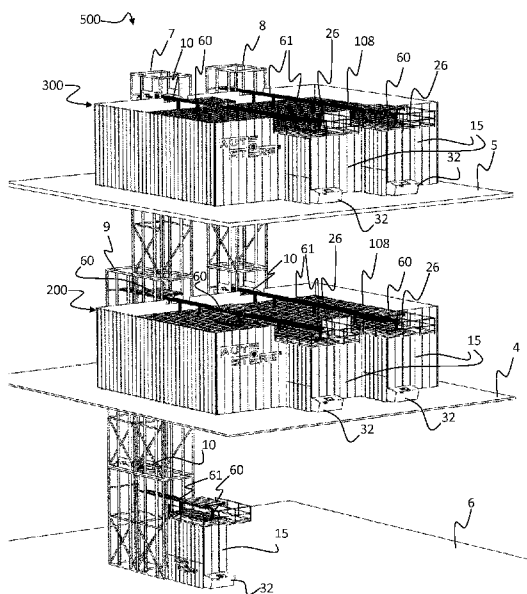


Fig. 18

(57) Abstract: The present invention relates to an automated storage and retrieval system (200, 300) comprising a track system (108) and a plurality of storage columns (105), the system further comprising: - at least one transfer vehicle (3, 45, 60, 75, 80, 81, 82), arranged to transport at least one storage container (106) in a horizontal plane which is located above the horizontal plane of the track system (108), - at least one storage container lift assembly (7, 8, 9) comprising at least one movable lifting member (10a, 10b), wherein each movable lifting member is arranged to receive at least one storage container (106) from the transfer vehicle (3, 45, 60, 75, 80, 81, 82), and the at least one movable lifting member (10a, 10b) is arranged for vertical movement to and from the plane where the transfer vehicle (3, 45, 60, 75, 80, 81, 82) of the system (200, 300) operates. Furthermore, the invention relates to a storage assembly comprising such automated storage and retrieval systems, a storage container lift assembly and operating methods thereof.



**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))*

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INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2019/064063

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 H01L

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	JP H11 278607 A (MURATA MACHINERY LTD) 12 October 1999 (1999-10-12)	11
Y	claim 1 figures 1-4 paragraph [0001] - paragraph [0015] -----	4
X	EP 2 920 088 A1 (JAKOB HATTELAND DISPLAY AS [NO]) 23 September 2015 (2015-09-23)	1,2,5-17
Y	claim 1 figures 1-10 paragraph [0001] - paragraph [0002] paragraph [0010] - paragraph [0065] ----- -/--	4

Further documents are listed in the continuation of Box C.

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

11 September 2019

Date of mailing of the international search report

17/12/2019

Name and mailing address of the ISA/

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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2019/064063

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2017/150005 A1 (MURATA MACHINERY LTD [JP]) 8 September 2017 (2017-09-08) claim 1 figures 1-18 paragraph [0001] - paragraph [0020] paragraph [0022] - paragraph [0072] -----	1-10, 12-17
X	WO 98/58402 A1 (APPLIED MATERIALS INC [US]) 23 December 1998 (1998-12-23)	11
Y	claim 1 figures 1-5 page 1, line 1 - page 3, line 19 page 4, line 10 - page 13, line 16 -----	1,3,5,7, 8,10, 12-17
X	US 2016/013087 A1 (YOSHIOKA HIDEO [JP]) 14 January 2016 (2016-01-14)	11
Y	claim 1 figures 1-11 paragraph [0002] - paragraph [0008] paragraph [0020] - paragraph [0083] -----	1,2, 5-10, 12-17
A	EP 3 192 753 A1 (OCADO INNOVATION LTD [GB]) 19 July 2017 (2017-07-19) figures 12-14 -----	1-17

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/EP2019/064063

## 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.:

1-17

### 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: 1-17

An automated storage and retrieval system.

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2. claim: 18

A method of operating an automated storage and retrieval system.

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## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2019/064063

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP H11278607	A	12-10-1999	NONE
EP 2920088	A1	23-09-2015	AU 2013347061 A1 02-04-2015 CA 2885984 A1 22-05-2014 CN 104781163 A 15-07-2015 CY 1119688 T1 04-04-2018 DK 2920088 T3 16-10-2017 EA 201590919 A1 30-10-2015 EP 2920088 A1 23-09-2015 ES 2643269 T3 21-11-2017 HK 1212310 A1 10-06-2016 HR P20171467 T1 01-12-2017 HU E035822 T2 28-05-2018 JP 6463686 B2 06-02-2019 JP 2015535517 A 14-12-2015 KR 20150084773 A 22-07-2015 LT 2920088 T 10-11-2017 NO 334806 B1 02-06-2014 PL 2920088 T3 29-12-2017 PT 2920088 T 09-10-2017 SI 2920088 T1 30-11-2017 TW 201429837 A 01-08-2014 US 2016272421 A1 22-09-2016 US 2018065804 A1 08-03-2018 WO 2014075937 A1 22-05-2014
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