

NON-PUBLIC VERSION – PROTECTIVE ORDER MATERIAL

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OCADO GROUP PLC,
Petitioner,

v.

AUTOSTORE TECHNOLOGY AS,
Patent Owner.

IPR2021-00274
Patent 10,294,025 B2

Before FRANCES L. IPPOLITO, SCOTT B. HOWARD, and
ALYSSA A. FINAMORE, *Administrative Patent Judges*.

IPPOLITO, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision Determining Some Challenged Claims Unpatentable
Denying in Part, Dismissing in Part Petitioner's Motion to Strike
35 U.S.C. § 318(a)

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I. INTRODUCTION

Ocado Group PLC, (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1 and 18–20 of U.S. Patent No. 10,294,025 B2 (Ex. 1001, “the ’025 patent”). AutoStore Technology AS (“Patent Owner”) filed a Preliminary Response to the Petition (Paper 7). Pursuant to our authorization for supplemental briefing, Petitioner filed a Reply to the Preliminary Response addressing discretionary denial under § 314(a) (Paper 8), and Patent Owner filed a Sur-reply to that Reply (Paper 10). On May 28, 2021, per our instruction, the parties submitted a Joint Statement regarding the status of *In the Matter of Certain Automated Storage and Retrieval Systems, Robots, and Components Thereof*, Inv. No. 337-TA-1228 (filed October 1, 2020) (the “ITC investigation”), which involves the ’025 patent. Paper 11.

We instituted an *inter partes* review of all challenged claims 1 and 18–20 on all grounds presented in the Petition. Paper 12 (“Dec.”). Patent Owner filed a Response to the Petition. Paper 20 (“PO Resp.”).¹ Petitioner filed a Reply (Paper 29, “Pet. Reply”)² and Patent Owner filed a Sur-reply (Paper 37, “Sur-reply”).³

Petitioner, with our authorization, filed a Motion to Strike (Paper 42, “Mot. Strike”), to which Patent Owner filed an Opposition (Paper 43, “Opp. Strike”).

An oral hearing was held on March 28, 2022, and a transcript of the public portion of the hearing is included in the record. Paper 58 (“Public

¹ A public version was filed as Paper 21.

² A public version was filed as Paper 28.

³ A public version was filed as Paper 38.

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Tr.”). A transcript of the confidential portion of the hearing is sealed in the record. Paper 57 (“Confidential Tr.”)

We have jurisdiction under 35 U.S.C. § 6. We issue this Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons explained below, Petitioner has shown by a preponderance of the evidence that claims 1, 18, and 19 of the ’025 patent are unpatentable. *See* 35 U.S.C. § 316(e) (2018). Petitioner has *not* shown by a preponderance of the evidence that claim 20 of the ’025 patent is unpatentable. We also dismiss in part and deny in part Petitioner’s Motion to Strike.

A. Motion to Strike

Petitioner’s Motion seeks to strike a new claim construction and arguments regarding Lindbo ’313 that Patent Owner purportedly raised for the first time in Patent Owner’s Sur-reply. Mot. Strike 1–5.

Under the Board’s rules, a “sur-reply may only respond to arguments raised in the corresponding reply and may not be accompanied by new evidence other than deposition transcripts of the cross-examination of any reply witness.” 37 C.F.R. § 42.23(b) (2020). We address each of Petitioner’s concerns below.

1. New Claim Construction

Petitioner contends that Patent Owner “originally argued that the displacement motor limitation did not need to be construed, and indeed, that no term ‘needs to be construed to address the issues raised in the Petition.’” Mot. Strike 1 (citing PO Resp. 5). According to Petitioner, Patent Owner “reversed course and argued that the displacement motor limitation should be construed to permit ‘the use of two motors instead of one motor to lift the set of four wheels.’” *Id.* at 2 (citing Sur-reply 21). Petitioner contends that

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Patent Owner made these new arguments in support of secondary considerations. *Id.*

In response, Patent Owner counters that it has not proposed a new claim construction and further asserts that “[w]hether the claimed displacement motor consists of one or more motors was not at issue because Petitioner only identified a single displacement motor in [Lindbo ’178].” Opp. Strike 1 (citing Pet. 44–45).

We determine that this challenge is moot because the claim construction of “a displacement motor” recited in independent claim 1 is not dispositive of any dispute. Indeed, as recognized by Patent Owner, Petitioner argues its case under a construction that a single displacement motor is required by the challenged claims and that motor 188 in Lindbo ’178 and Lindbo ’313 teaches a single displacement motor. *See infra* Sect.II.D.3; Sect.II.E.3. While Patent Owner may contest whether claim 1 covers more than a single displacement motor, that dispute is not before us because Petitioner has not relied upon more than one motor in the prior art references for its unpatentability challenges. Moreover, we have not relied upon Patent Owner’s purported claim construction for our analysis.

Accordingly, we dismiss this aspect of Petitioner’s Motion as moot.

2. *Arguments based on Lindbo ’313*

Separately, Petitioner asserts that Patent Owner introduced a new argument regarding the charging port in the Sur-reply. According to Petitioner, “[t]he [Patent Owner Response] did not even mention a ‘charging port,’ much less rely on it as the basis for any argument concerning [Lindbo ’313].” Mot. Strike 3. Petitioner asserts that had it known of these

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contentions, it would have more fully developed the record to show that these new arguments lack merit. *Id.* at 4.

Patent Owner counters that Petitioner relied on Lindbo '313's Figures 8 and 10–12 for first time in its Reply. Opp. Strike 3. Patent Owner asserts that its Sur-reply “directly responds to Petitioner’s new arguments by demonstrating the charging port shown in Figures 10 and 12 extends beyond the centerline of the rails.” *Id.* (citing Sur-Reply 1–5).

We agree with Patent Owner. On page 27 of its Reply, Petitioner provides an annotated version of Lindbo '313's Figure 12 that includes a protrusion referred to as a “charging port” by the parties. Pet. Reply 27. As such, Patent Owner’s arguments regarding the same structure respond directly to Petitioner’s arguments raised in the Reply. Accordingly, we find Petitioner has failed to establish that it is entitled to the requested relief. *See* 37 C.F.R. § 42.20(c) (“The moving party has the burden of proof to establish that it is entitled to the requested relief.”). We deny Petitioner’s motion in this regard.

B. Related Proceedings

The parties identify various matters that would affect or be affected by a decision in this proceeding. Pet. 2; Paper 6, 2. The '025 patent has been asserted in *AutoStore Technology AS v. Ocado Group PLC*, No. 2:20-cv-00494-RAJ-LRL (E.D. Va. filed October 1, 2020) (“District Court Litigation”). *See* Ex. 1002, 1–2. The '025 patent is also involved in the ITC investigation noted above. Ex. 2009, 1–3; Paper 6, 2; Pet. 2⁴. The District

⁴ Petitioner incorrectly lists the ITC proceeding as ITC No. 337-3498. Pet. 2.

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Court Litigation has been stayed pending the ITC investigation. Prelim. Reply 3; Ex. 2001, 1.

Four additional patents at issue in the District Court Litigation and the ITC investigation have also been challenged by Petitioner in the following *inter partes* or post-grant review petitions: IPR2021-00311 regarding U.S. Patent No. 10,474,140 B2; IPR2021-00398 regarding U.S. Patent No. 10,093,525 B2; IPR2021-00412 regarding U.S. Patent No. 10,494,239 B2; and PGR2021-00038 regarding U.S. Patent No. 10,696,478 B2. *See* Ex. 2015, 1–2; Ex. 2009, 1.

C. *The '025 Patent*

The '025 patent, titled “Robot for Transporting Storage Bins,” is directed to a remotely operated vehicle assembly for picking up storage bins from a storage system in which the vehicle is able to change direction. Ex. 1001, code (54), 1:6–9. The storage system is based on a Cartesian coordinate system having a first X-direction and a second Y-direction defining a lateral plane, and a vertical direction, or Z-direction, perpendicular to the lateral plane. *Id.* at 2:23–28. The vehicle, or robot, is put into motion by driving means that include a first set of vehicle wheels that allow movement of the vehicle along the first direction of the storage system and a second set of vehicle wheels that allow movement of the vehicle along the second direction perpendicular to the first direction. *Id.* at 2:7–15, 6:19–20. Rails extend in the X-direction and the Y-direction, and the first and second sets of wheels are moved between a lowered, non-displaced state in contact with the rails and an upper, displaced state spaced from the rails. *Id.* at 8:5–14, 8:63–66, Figs. 7(a), 7(b). When the first set of wheels is in contact with the rails, the vehicle is configured to move in the

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X-direction, and when the second set of wheels is in contact with the rails, the vehicle is configured to move in the Y-direction. *Id.* at 6:60–64.

In order to change the direction of the vehicle, a vertically displaceable bar connected to a displacement plate is raised or lowered. Ex. 1001, 7:14–26. Because each set of wheels is rigidly connected to the displacement plate, movement of the displaceable bar causes movement between the displaced and non-displaced states. *Id.* at 7:16–24. In one embodiment, a displacement motor operates a lever arm that exerts an upward directed pressure force on the displacement bar to push the bar vertically upward. *Id.* at 7:35–38. In particular, the displacement bar vertically displaces the displacement plate, and the set of wheels rigidly connected to the displacement plate vertically moves. *Id.* at 7:14–26. When the first set of wheels is displaced, the first set of wheels is moved out of contact with the rails, and the vehicle is no longer configured to move in the X-direction. *Id.* at 6:60–64. When the first set of wheels is displaced, the second set of wheels contacts the rails, and the vehicle is configured to move in the Y-direction. *Id.* at 6:60–64. The second set of vehicle wheels can be displaced instead of, or in addition to, the first set of vehicle wheels, during a change of vehicle direction. *Id.* at 7:30–33.

The wheels are connected to a body of the vehicle, as seen, for example, in Figure 2, reproduced below.

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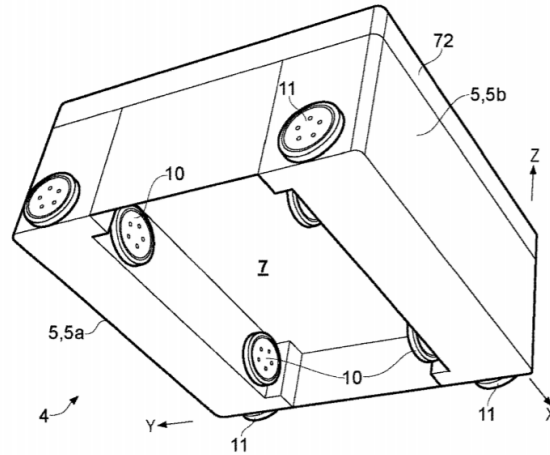


FIG. 2

Figure 2 is a perspective view of a remotely operated vehicle according to a first embodiment of the invention. Ex. 1001, 5:10–11. Vehicle body 4 includes centrally arranged cavity 7, a first set of four vehicle wheels 10 and a second set of four vehicle wheels 11 that are oriented perpendicular to each other. *Id.* at 6:23–29. Cavity 7 is sized to contain the largest storage bin 2 intended to be picked up by robot 1, as well as vehicle lifting device 9, depicted in Figures 11(a)–(b), reproduced below. *Id.* at 6:32–34.

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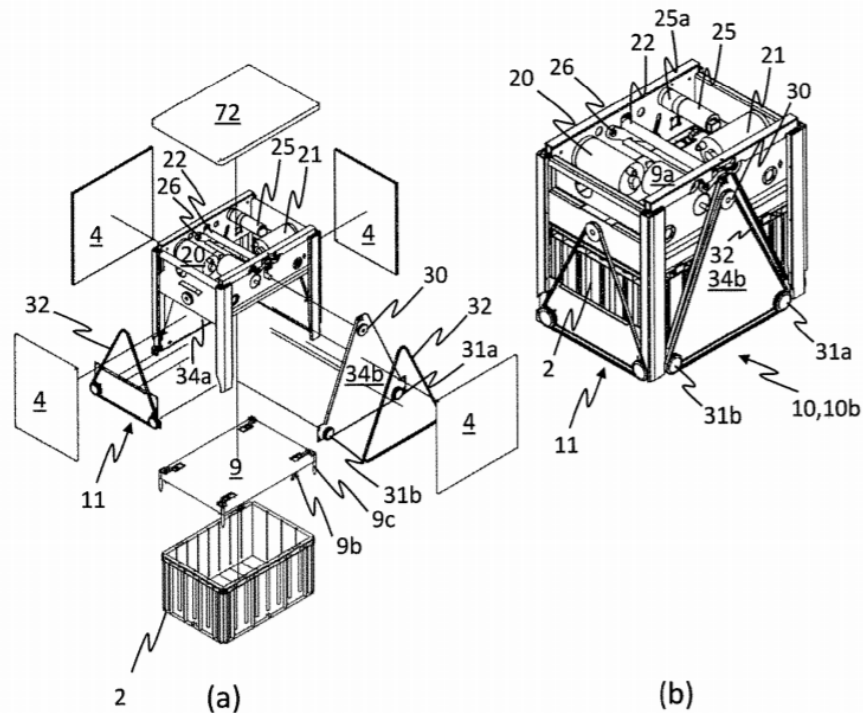


FIG. 11

Figures 11(a)–(b) are perspective views of a vehicle in exploded and non-exploded views, respectively. Ex. 1001, 5:44–47. As depicted in Figure 11(a), lifting device 9 is connected at least indirectly to vehicle body 4 and suitable for lifting storage bin 2 into the cavity. *Id.* at 1:62–64. Figures 11(a)–(b) also depict displacement motor 25, which displaces displacement arm 22 vertically, as being situated in a lateral plane above the cavity, wherein the lateral plane is defined as any plane that is parallel to the plane set up by the first (X) and second (Y) directions. *Id.* at 2:19–26.

D. Illustrative Claim

Petitioner challenges claims 1 and 18–20 (“challenged claims”) of the ’025 patent. Pet. 1. Claims 1 and 18 are independent, and claims 19–20

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depend from claim 18. Claim 1 is illustrative of the claimed subject matter and is reproduced below.

1. A remotely operated vehicle assembly for picking up storage bins from an underlying storage system, comprising:
 - a vehicle body displaying a cavity for receiving a storage bin within the storage system[,]
 - a vehicle lifting device connected to the vehicle body for lifting the storage bin into the cavity,
 - driving means comprising:
 - a first set of vehicle wheels connected to the vehicle body allowing movement of the vehicle along a first direction within the storage system during use, and
 - a second set of vehicle wheels connected to the vehicle body allowing movement of the vehicle along a second direction in the storage system during use, the second direction being perpendicular to the first direction,
 - a displacement arrangement coupled to the driving means comprising
 - a displacement motor configured to provide power to displace at least one of the first set of vehicle wheels and the second set of vehicle wheels means between a displaced state where the first or second set of vehicle wheels is displaced away from the underlying storage system during use, and a non-displaced state where the first or second set of vehicle wheels is in contact with the underlying storage system during use,
 - wherein the displacement motor is situated in a lateral plane above the cavity, and further configured to generate a power that is converted to a vertically directed pressure force acting on the first or second set of vehicle wheels.

Ex. 1001, 11:64–12:30.

E. The Asserted Grounds of Unpatentability

Petitioner asserts that claims 1 and 18–20 are unpatentable on the following grounds:

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Basis	35 U.S.C. §	Claims Challenged
Lindbo '178 ⁵	102	1, 18–20
Lindbo '178	103	1, 18–20
Lindbo '313 ⁶	102	19, 20 ⁷
Lindbo '313	103	19, 20
Lindbo '178, Lindbo '104 ⁸	103	19
Lindbo '901, ⁹ Bianco ¹⁰	103	1, 18–20

See Pet. 8–9. In support of its unpatentability arguments, Petitioner relies on the declaration testimony of Dr. Brian Pfeifer (Ex. 1008, the “Pfeifer Declaration”).

II. ANALYSIS

A. Principles of Law

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831 (Fed. Cir. 1990).

In *Graham v. John Deere Co.*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires

⁵ Lindbo et al. (US 10,577,178 B2, issued Mar. 3, 2020) (Ex. 1003).

⁶ Lindbo et al. (GB 1314313.6, published Feb. 12, 2015) (Ex. 1004).

⁷ Petitioner’s “Statutory Grounds of Unpatentability” on page 8 of the Petition states that claims 19–20 are anticipated or obvious based on Lindbo '313. This description of Petitioner’s challenge is consistent with the heading on page 38 of the Petition. We note, however, that pages 38 through 48 address claims 1 and 18.

⁸ Lindbo et al. (GB 2520104 A, published May 13, 2015) (Ex. 1005).

⁹ Lindbo (WO 2014/195901 A1, published Dec. 11, 2014) (Ex. 1010).

¹⁰ Bianco et al. (WO 2005/077789 A1, published Aug. 25, 2005) (Ex. 1011).

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consideration of four factors: (1) the “level of ordinary skill in the pertinent art,” (2) the “scope and content of the prior art,” (3) the “differences between the prior art and the claims at issue,” and (4) “secondary considerations” of non-obviousness such as “commercial success, long-felt but unsolved needs, failure of others, etc.” *Id.* at 17–18. “While the sequence of these questions might be reordered in any particular case,” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the Federal Circuit has “repeatedly emphasized that an obviousness inquiry requires examination of all four *Graham* factors and that an obviousness determination can be made only after consideration of each factor.” *WBIP v. Kohler*, 829 F.3d 1317, 1328 (Fed. Cir. 2016) (“A determination of whether a patent claim is invalid as obvious under § 103 requires consideration of all four *Graham* factors, and it is error to reach a conclusion of obviousness until all those factors are considered.”).

B. Level of Ordinary Skill in the Art

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus. Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 1011 (Fed. Cir. 1983).

Petitioner contends that a person of ordinary skill in the art (“POSITA”) at the time of the invention of the ’025 patent would have had the following education and experience: “a bachelor’s degree in mechanical engineering, and at least two to three years’ experience working in the field

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of the design of robotic vehicles for material handling systems.” Pet. 16
(citing Ex. 1008 ¶ 64).

Patent Owner does not dispute this level of skill. *See* PO Resp. 5 (not addressing the level of skill).

We adopt Petitioner’s proposal as reasonable.

C. Claim Construction

For petitions filed on or after November 13, 2018, the “broadest reasonable interpretation” standard has been replaced with the federal court claim construction standard that is used to construe a claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. 42.100(b). This is the same claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny.

Petitioner proposes a construction for the claim term “driving means.” Pet. 16–17. Patent Owner does not propose any claim construction. *See* PO Resp. 5 (“While Petitioner proposed a construction for the claim term “driving means,” this term is not in dispute and the parties agree.”). Patent Owner further asserts that “[s]everal claim terms of the ’025 Patent were construed in the International Trade Commission Investigation, *In the Matter of Certain Automated Storage and Retrieval Systems, Robots, and Components Thereof* (Inv. No. 337-TA-1228) . . . [b]ut Patent Owner is not aware of any relevance of those constructions to the issues in dispute here.” *Id.*

On this record, we determine that no claim term requires an express construction for the purpose of determining whether Petitioner has proven that the challenged claims are unpatentable. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017)

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 (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

D. Anticipation by Lindbo ’178 – Claims 1, 18–20

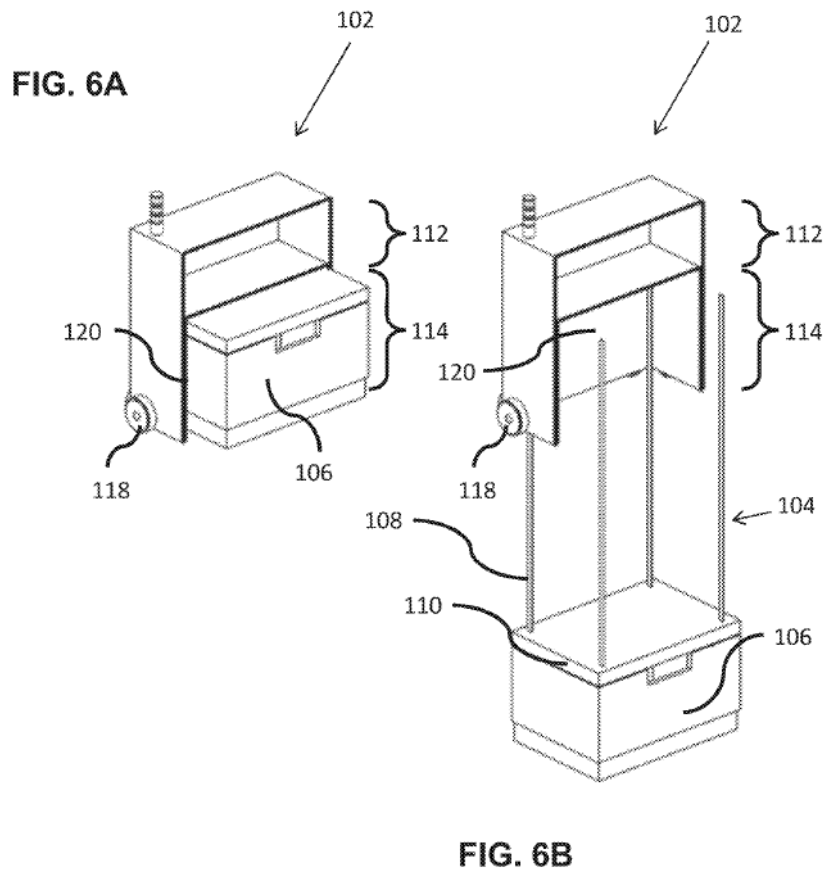
1. Overview of Lindbo ’178

Lindbo ’178 claims priority to Lindbo ’313 and relates to robotic devices for handling storage containers in a storage system comprising a grid of stacked units. Ex. 1003, 1:8–10. The storage system of Lindbo ’178 includes first set 22a of parallel rails 22 for guiding movement of robotic load handling devices 30 in a first, X-direction, and second set 22b of parallel rails 22, arranged perpendicular to first set 22a, that guide movement of the robotic devices in a second, Y-direction, perpendicular to the first direction. *Id.* at 2:62–3:1. Lindbo ’178’s robotic device 102 includes two sets of wheels 116, 118, which run on the rails to enable movement of Lindbo’s robotic device 102 in the X- and Y-directions respectively along the rails. *Id.* at 7:1–2, 9:7–11.

Each set of Lindbo ’178’s wheels 116, 118 can be lifted and lowered, so that either the first set of wheels or the second set of wheels is engaged with the respective set of rails 22a, 22b at any one time. Ex. 1003, 10:18–37. In particular, Lindbo ’178 explains that operating motor 188 drawing common linkage 184 upwards causes first set of wheels 116 to be raised, leaving second set of wheels 118 alone engaged with the rails to enable movement of robotic device 102 in the Y-direction. *Id.* at 10:27–31. Similarly, operating motor 188 pushing common linkage 184 downwards causes first set of wheels 116 to move downwards to engage with the rails

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and lifts second set of wheels 118 clear of the rails to enable movement of robotic device 102 in the X-direction. *Id.* at 10:31–37.

Lindbo '178's robotic device 102 also includes a cavity or recess 120 sized to accommodate storage bin 106, as seen in Figures 6A and 6B, reproduced below. Ex. 1003, 9:17–19.



Figures 6A and 6B are schematic perspective views of a robotic device with part of the robotic device cut-away to show the inside of the device. *Id.* at 8:30–33.

As seen in Figures 6A and 6B, Lindbo '178's robotic device 102 includes lifting device 104 that is configured to grip the top of container 106 to lift the container into cavity 120. Ex. 1003, 9:2–3. Figures 6A and 6B

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also depict upper part 112, which Lindbo '178 teaches houses all of the significant bulky components including the motors for driving wheels 116, 118 and motors for driving lifting device 104, as well as sensors and electronics. *Id.* at 9:27–33.

2. *Effective Filing Date of Lindbo '178*

U.S. Patent Application No. 15/905,294 (“the '294 application”), which issued as Lindbo '178, was a continuation application of U.S. Patent Application No. 14/910,858, filed as PCT/GB2014/052273 on *July 24, 2014*. *Id.* at code (63). Additionally, on its face, Lindbo '178 claims priority to Lindbo '313, which is a United Kingdom patent application filed on *August 9, 2013*. *Id.* at code (30).

Petitioner asserts that Lindbo '178 is entitled to the August 9, 2013 filing date¹¹ because each claim of Lindbo '178 is supported by the disclosure of Lindbo '313. Pet. 4–6.

Patent Owner contends that Lindbo '178 is not prior art under 35 U.S.C. § 102(a)(2) because it was not effectively filed before the priority date of the '025 patent. PO Resp. 6. Patent Owner argues that Lindbo '178 is not entitled to priority to Lindbo '313 for three reasons: (1) Petitioner has failed to show that Lindbo '178 is entitled to the priority of Lindbo '313 under 35 U.S.C. § 119(a); (2) Lindbo '313 does not support the claims of Lindbo '178; and (3) Petitioner relies on new subject matter in Lindbo '178. *Id.* at 8–13; *see also* Sur-reply 6–7. We address these arguments below.

¹¹ On its face, the '025 patent claims priority to Norwegian Application NO20140773 (Ex. 1009, “NO/773”), filed on *June 19, 2014*, which is after the August 9, 2013 filing date of Lindbo '313. Ex. 1001, code (30).

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a) Priority under 35 U.S.C. § 119(a)

Patent Owner contends that there is no evidence that the applicant on the face of Lindbo '313, *Ocado Limited*, filed Lindbo '313 on behalf of the applicant for Lindbo '178, *Ocado Innovation Limited*. PO Resp. 12–13.

Petitioner responds that Lindbo '178 is entitled to priority to Lindbo '313 because Lindbo '313 was filed by the inventors' assignee, Ocado Limited. Pet. Reply 5. According to Petitioner, all four inventors of Lindbo '178 were employed by Ocado Limited and were required to assign their inventions to Ocado Limited under their employment agreements when Lindbo '313 was filed. *Id.* (citing Ex. 1003, Cover; Ex. 1017 ¶ 14; Ex. 1018 ¶ 14; Ex. 1019 (Schedule 3); Ex. 1020 ¶ 19). Moreover, Petitioner contends that “under UK law, ‘an invention made by an employee shall . . . be taken to belong to his employer.’” *Id.* (quoting UK Patents Act of 1977 § 39(1)).

35 U.S.C. § 119(a) provides that

[a]n application for patent for an invention filed in this country by any person who has, or *whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country* which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, or in a WTO member country, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within 12 months from the earliest date on which such foreign application was filed.

35 U.S.C. § 119(a) (emphasis added).

As discussed, the applicant on the face of Lindbo '313 was Ocado Limited at the time of filing. Ex. 1004, [2]. According to a Business Purchase Agreement executed on June 12, 2014, Ocado Limited (which was

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renamed Ocado Retail Limited) was purchased by Ocado Technology Limited (which was renamed *Ocado Innovation Limited*). Ex. 1022, 1–2. Lindbo ’313 was included in the sale. *Id.* at 20 (Patents). The transfer of ownership is further memorialized in the Confirmatory Assignment Document shown in Exhibit 1023. There, Lindbo ’313 is listed in Appendix A of the assignment document indicating that Ocado Retail Limited (formerly Ocado Limited) “has assigned all of their right, title, and interest in and to . . . the ‘Assets’ detailed in Appendix A to the ASSIGNEE [Ocado Innovation Limited], effective 15 June 2014.” Ex. 1023, 4. Further, Petitioner has provided evidence that each of the named inventors in Lindbo ’178—Lars Lindbo, Robert Stadie, Matthew Whelan, and Christopher Brett—were employed by Ocado Limited and were obligated by their employment agreements to transfer rights to intellectual property created in the course of their employment with Ocado Limited. *See* Ex. 1018 ¶ 14.

As such, we determine that the evidence supports Petitioner’s position that Lindbo ’178 is entitled to claim foreign priority to Lindbo ’313. More specifically, we determine that Lindbo ’313 was filed on behalf of the inventors by Ocado Limited, a predecessor of Ocado Innovation Limited. Exs. 1017–1020; Ex. 1021; 1022; Ex. 1023, 4; *see also* 35 U.S.C. 119(a).

Our determination is consistent with *Boston Scientific Scimed Inc. v. Medtronic Vascular Inc.*, 497 F.3d 1293 (Fed. Cir. 2007) cited by Patent Owner (*see* PO Resp. 13). In *Boston Scientific* an organization filed a European patent application for an invention, and then later became affiliated with an American inventor. That inventor tried to claim priority to the European application, but the Federal Circuit ruled that, because the organization had not been acting on the American’s behalf at the time the

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application was filed, the priority claim was improper under § 119(a). Specifically, the court held that “a foreign application may only form the basis for priority under section 119(a) if that application was filed by either the U.S. applicant himself, or by someone acting on his behalf at the time the foreign application was filed.” *Boston Sci.*, 497 F.3d at 1297–98 (“[W]hile the foreign application must obviously be for the same invention and may be filed by someone other than the inventor, section 119(a) also requires that a nexus exist between the inventor and the foreign applicant at the time the foreign application was filed.”).

Here, there is sufficient evidence in our record that indicates Lindbo ’313 was filed on behalf of Lindbo ’178 inventors via assignment to Ocado Limited initially and Ocado Innovation Limited eventually. Exs. 1017–1020; Ex. 1021; 1022; Ex. 1023, 4; *see also* 35 U.S.C. 119(a).

b) Lindbo ’178 is Prior Art Under Dynamic Drinkware

In the Petition, Petitioner provides a claim chart that lists citations to the disclosure of Lindbo ’313 that allegedly support each claim in Lindbo ’178. Pet. 4–5. Patent Owner contends that Lindbo ’313 does not support the claims or the subject matter disclosed in Lindbo ’178. Referring to *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375 (Fed. Cir. 2015), Patent Owner contends that claims 1, 10, and 11 of Lindbo ’178 are not supported by Lindbo ’313. PO Resp. 8–10.

To start, for claim 1, Patent Owner argues that the “load handling device when occupying one grid space will not obstruct a load handling device occupying or traversing adjacent grid spaces in the first and second directions” limitation of claim 1 of Lindbo ’178 is not supported by Lindbo

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'313. PO Resp. 8. Patent Owner further relies on the testimony of Dr. Janét, who testifies that

[a] single grid space robot can have a smaller footprint that reduces the likelihood of obstructing a path of other robots while still obstructing a load handling device on adjacent grid spaces. A single grid space robot would essentially double the amount of vehicles on the grid compared to prior art two grid space vehicles, even if they obstructed adjacent grid spaces. *A POSITA thus would not have understood that an increased number of robots and a decreased chance of obstructing the path of another robot discloses or implies that the robot “will not obstruct a load handling device occupying or traversing adjacent grid spaces in the first and second directions.”*

Ex. 2058 ¶ 66 (emphases added). Nonetheless, Dr. Janét agrees that double track rails would address this obstruction. Specifically, Dr. Janét testifies that “[i]t is the use of the double track rail (in both the first and second direction) that allows robots to pass/cross at all four lateral sides.” *Id.* ¶ 67. Dr. Janét, however, contends that Lindbo '313 does not disclose double track rails in both directions. *Id.*

Petitioner agrees that it is the combination of a single space robot with double track rails that allows robots to traverse on adjacent grid spaces in both lateral directions. Pet. Reply 3 (citing Ex. 1008 ¶¶ 44, 166; Ex. 1004, 5:38–39, 7:40–8:2, Figs. 5–12). Petitioner further maintains that Lindbo '313 discloses both a single grid space load handling device and double track rails. *Id.*

We observe first that the parties dispute whether Lindbo '313 discloses single space robots. For example, in its Sur-reply, Patent Owner contends that “[Lindbo '313's] robot is larger than a single grid space as measured from the centre line of each rail, at least because a charging port

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on the robot extends beyond the alleged centerline of the rail.” Sur-reply 6.

Nonetheless, Lindbo ’313 teaches explicitly that

[b]y arranging the bulky components of the load handling device above the container-receiving space, the footprint of the load handling device is reduced compared to the cantilever designs shown in Figures 3(a) to 3(c) and described in NO317366, in which the bulky components are housed in a vehicle module disposed to one side of the container-receiving space. *Advantageously, the load handling device of the invention occupies the space above only one stack of containers in the frame, in contrast to the cantilever design shown in Figures 3(a) to 3(c) which occupies the space above two stacks.* This means that, by virtue of the invention, the efficiency of operation of the storage system can be improved, because *the reduced footprint allows more load handling devices to be accommodated and reduces the likelihood of one device obstructing the optimum path of another.*

Ex. 1004, 6:5–15 (emphases added). As such, we agree with Petitioner that Lindbo ’313 discloses a single space robot, which is a load handling device that occupies the space above only one stack of containers. *See id.*

Further, Petitioner has pointed out that Figure 9 of Lindbo ’313 shows double track rails with a dividing ridge. For convenience, Lindbo ’313’s Figure 9 is provided below:

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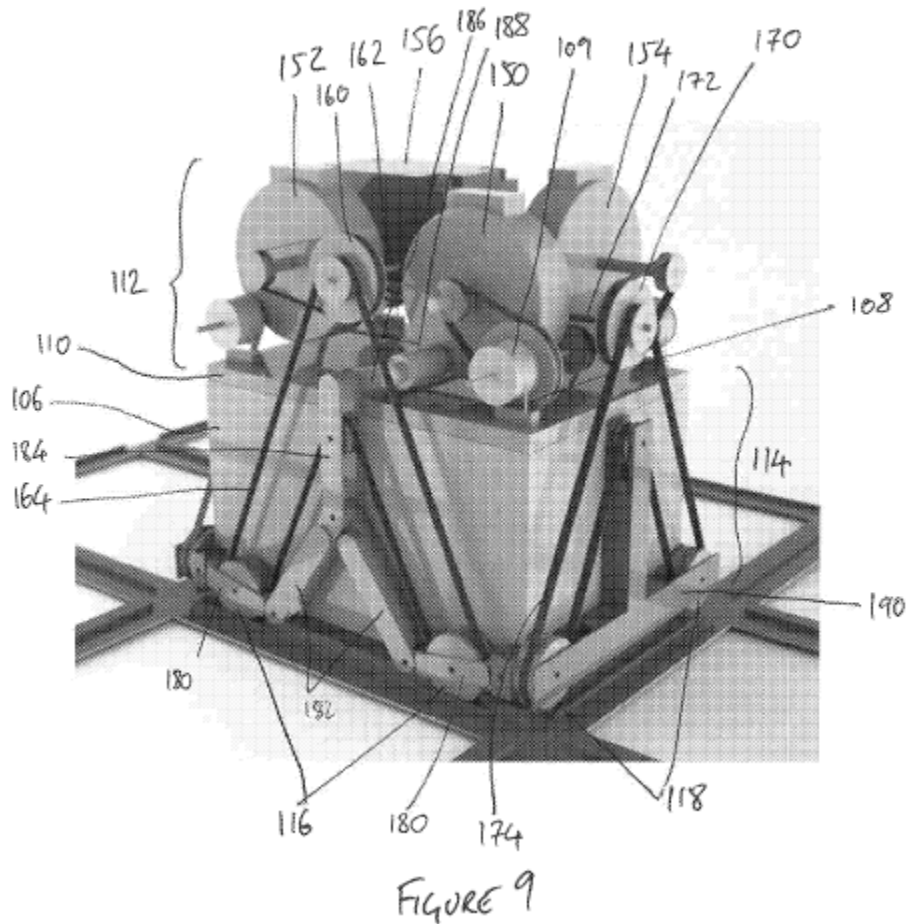


Figure 9 shows load handling device 100 with bin 106 lifted into recess 120. Ex. 1004, 12:11. Lindbo '313 further teaches that the first set of wheels 116 “can be raised clear of the rails or lowered onto the rails.” *Id.* at 11:35. Rails are shown in Figure 9, but are not labeled with reference numerals. *See id.* at Fig. 9. Nonetheless, Lindbo '313 states that Figure 9 shows the “first set of wheels 116 move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in Figure[] 9.” Ex. 1004, 12:4–5. Further, from the figure, the rail tracks include a raised centerline that divides the track into two portions. *Id.*; *see also* Pet. Reply 19 (Petitioner’s annotated Figure 9 marked with “Raised Centerline”).

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Patent Owner takes the position that Figure 9 is too blurry to provide any unambiguous details on how the wheels engage the rail tracks. PO Resp. 33–34; Sur-reply 5. According to Patent Owner, Dr. Janét testifies that “the alleged tracks are not reasonably visible unless Petitioner shades in a conceptual rendition.” PO Resp. 33 (citing Ex. 2011 ¶ 110). Patent Owner adds that Lindbo ’313 “does not contain any text that describes, explains, or even suggests double track rails.” *Id.* (citing Ex. 2011 ¶¶ 110, 114).

Given the written disclosure accompanying Figure 9, we determine Dr. Pfeifer’s testimony is better supported by Lindbo ’313. More specifically, Dr. Pfeifer testifies that “Figure 9 shows both wheel sets 116, 118 confined to travel on a single track, limited by the centerline, of the double track rails.” Ex. 1008 ¶ 162. Further, Lindbo ’313 expressly discloses that load handling device 100 has wheels that engage with the rail tracks. Ex. 1004, 11:35. In Figure 9, wheels 116 are shown to be down, which is consistent with Lindbo ’313’s disclosure that the wheels can be lowered to run on the rails. *Id.* In this way, we agree with Petitioner that Lindbo ’313 describes load handling device 100 with wheels engaged to a portion of the rail tracks shown in Figure 9.

Dr. Janét’s testimony otherwise is inconsistent with Lindbo ’313’s disclosure. In particular, during his cross-examination, Dr. Janét was asked if Figure 9 shows the wheels engaging with the rails. He responded that “they’re not called rails. Hard to say what they are exactly.” Ex. 1026, 170:16–19. However, as discussed, Lindbo ’313 explicitly discloses that wheels 116 and 118 can be raised or lowered onto the *rails* in Figure 9. Ex. 1004, 11:35–36. Thus, Dr. Janét’s testimony contradicts Lindbo ’313’s

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disclosure and is entitled to less weight than Dr. Pfeifer’s, which is supported by the disclosure.

Moreover, we note that Dr. Janét further testified that Figure 9 could show a “ridge” that is the rail itself. Ex. 1026, 175:10–19. In other words, Dr. Janét asserts that wheels 116 might rest or ride directly on a raised portion of the rails shown in Figure 9, rather than on another portion of the rail. Yet, again, Dr. Janét’s testimony ignores Lindbo ’313’s express disclosure that Figure 9 shows wheels 116 and 118 raised or lowered on the rails. In Figure 9, wheels 116 are down and engaged with a portion of the rails, not riding on the raised ridge as Dr. Janét proposes is possible.

That being the case, we further find that Dr. Pfeifer’s testimony regarding Figure 9’s double track rails to be better supported. Figure 9 depicts, as discussed in the accompanying written disclosure, that a load handling device includes wheels that are engaged with the rails. Ex. 1004, 12:3–6. As shown, the relative placement of wheels 116 is on one side of a divider on the rails. Further, we agree with Dr. Pfeifer, that the rail is split into two portions that form double tracks. Ex. 1024 ¶¶ 24–25.

To be sure, the propriety of relying upon a particular drawing depends upon the content of the drawing and the nature of the purported disclosure at issue. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1564 (Fed. Cir. 1991) (“We agree with the district court’s conclusion that drawings alone *may* be sufficient to provide the ‘written description of the invention’ required by § 112, first paragraph.”); *cf. PlaSmart, Inc. v. Kappos*, 482 F. App’x 568, 572–73 (Fed. Cir. 2012) (“Our precedent has held that drawings can be used as prior art, without referring to the surrounding description, only if the prior art features are clearly disclosed by the drawing.”); *In re Mraz*, 455 F.2d

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1069, 1072 (CCPA 1972) (“[W]e did not mean that things patent drawings show clearly are to be *disregarded*.”); *In re Seid*, 161 F.2d 229, 231 (CCPA 1947) (“[A]n accidental disclosure, if clearly made in a drawing, is available as a reference.”). Here, we credit Dr. Pfeifer’s testimony regarding what a POSITA would understand is unambiguously disclosed by Lindbo ’313’s Figure 9. This is because, as discussed, Dr. Pfeifer’s testimony is more consistent with and supported by Figure 9 and express written disclosure in Lindbo ’313. It is within our discretion to assign the appropriate weight to expert testimony. *See, e.g., Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding that the Board has discretion to give more weight to one item of evidence over another “unless no reasonable trier of fact could have done so”); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) (“[T]he Board is entitled to weigh the declaration and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations.”).

Thus, we are persuaded that the subject matter of Lindbo ’178’s claim 1 is supported by Lindbo ’313.

Patent Owner relies on the same arguments discussed above for the limitations recited in claims 10 and 11 of Lindbo ’178. PO Resp. 10 (citing Ex. 2058 ¶ 68; Ex. 1003, claims 10 and 11) (“For the same reasons, claims 10 and 11 of [Lindbo ’178], which require a robot that is able to access a grid space adjacent to another robot, are not supported by [Lindbo ’313].”).

For the same reasons discussed with respect to claim 1 of Lindbo ’178, we find Petitioner’s position to be sufficiently supported by the evidence of record. *See* Ex. 1004, 11:35–36, Fig. 9. And for the reasons

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discussed above, we determine that Lindbo '178 is entitled to claim priority to Lindbo '313 under the *Dynamic Drinkware* analysis.

c) *Lindbo '178 is Prior Art Under 35 U.S.C. § 102(d)(2)*

Separate from its challenge under *Dynamic Drinkware*, Patent Owner further contends that Lindbo '178 is not prior art under 35 U.S.C.

§ 102(d)(2). According to Patent Owner, Petitioner relies on new subject matter in Lindbo '178 that was not disclosed in Lindbo '313. PO Resp. 10–12.

First, for challenged claim 19, Patent Owner argues that Petitioner relies upon Figure 7 of Lindbo '178 to disclose double track rails, “[b]ut Figure 7 of Lindbo '313 only shows a single track rail.” *Id.* at 11 (citing Pet. 29–34; Ex. 1004, Fig. 7; Ex. 2058 ¶¶ 112–113).

Second, for challenged claim 20, Patent Owner contends that Petitioner also relies on Figure 7 of Lindbo '178 to show a single space robot as measured from centerline to centerline of adjacent parallel rails. *Id.* at 12 (citing Pet. 36). Patent Owner contends that Lindbo '313 does not disclose a robot occupying a single grid space defined by the distance from the centerline of one rail to the centerline of the other rail that defines the grid space. *Id.* (citing PO Resp. § VIII.C; Ex. 2058 ¶¶ 109–114).

Third, Patent Owner contends that Lindbo '178 is not entitled to the priority date of Lindbo '313 for the alleged disclosure of a displacement motor configured to provide power to displace all four wheels of the first or second set of vehicle wheels because Lindbo '313 fails to disclose any method of connecting motor 188 to the wheels on the other side of the robot

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to “provide power” as required by challenged claim 1. *Id.* 11 (citing Ex. 2058 ¶¶ 70, 107; PO Resp. § VIII.A).

Section 102(d)(2) provides that

[f]or purposes of determining whether a patent or application for patent is prior art to a claimed invention under subsection (a)(2), *such patent or application shall be considered to have been effectively filed, with respect to any subject matter described in the patent or application . . . if the patent or application for patent is entitled to claim a right of priority under [35 U.S.C. §] 119 . . . based upon 1 or more prior filed [provisional] applications for patent, as of the filing date of the earliest such application that describes the subject matter.*

35 U.S.C. § 102(d)(2) (emphases added). Per the emphasized language, Lindbo ’178 is entitled to the filing date of Lindbo ’313 only by showing that Lindbo ’178’s relied-upon subject matter is described by Lindbo ’313. *See also* Manual of Patent Examining Procedure (MPEP) § 2154.01(b), “Determining When Subject Matter Was Effectively Filed Under AIA 35 U.S.C. 102(d) [R-10.2019],” at 2100-375 (“AIA 35 U.S.C. 102(d) requires that a prior-filed application to which a priority or benefit claim is made must describe the subject matter from the U.S. patent document relied upon in a rejection.”).

Initially, we note that Patent Owner’s comparison of the challenged claims of the ’025 patent with Lindbo ’313 is not the proper inquiry under 35 U.S.C. § 102(d)(2). *See* PO Resp. 10–12. Whether the disclosure of Lindbo ’178 or Lindbo ’313 anticipates or renders obvious the limitations recited in the challenged claims of the ’025 patent is discussed in later sections of this Decision. This is a different inquiry from priority under 35 U.S.C. § 102(d)(2), which considers whether the subject matter described in Lindbo ’178 is also described in Lindbo ’313.

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As discussed above, Petitioner relies upon Lindbo '178's disclosure of single space robots and Figure 9 (e.g., double track rails) to disclose load handling devices that occupy one grid space and do not obstruct a load handling device occupying or traversing adjacent grid spaces in first and second directions. *See infra* Sect. II.D.2.b. Also discussed in detail above, we determine that this subject matter described in Lindbo '178 is also described in Lindbo '313. *Id.*; *see* Ex. 1004, 6:5–15, 11:35–36, 12:11, Fig. 9.

Further, with respect to Lindbo '178's disclosure of motors, we observe that Lindbo '178's wheel positioning mechanism relied upon by Petitioner is also described in Lindbo '313. *See* Ex. 1003, 10:18–37, Figs. 9, 11, 12; Ex. 1004, 11:35–12:7, Fig. 9. As Petitioner points out,

[t]he *textual* description of the displacement arrangement in [Lindbo '313] is identical to [Lindbo '178]: Common linkage 184 on each side of the robot is connected to lever arm 186 so that force from the motor 188 is transmitted to the full set of wheels. (*See* EX1004, 11:35-12:7; *see also* EX1026, 193:17-197:22.). Figures 8-9 and 12 of [Lindbo '313] disclose that this connection is accomplished by a bar connecting lever arm 186 to common linkage 184 on each side.

Pet. Reply 14.

Thus, for the reasons discussed above, we determine that Lindbo '178 is also entitled to claim priority to Lindbo '313 under 35 U.S.C. § 102(d)(2).

d) Conclusion

Based on the complete record, we determine that Petitioner has shown sufficiently that Lindbo '178 is prior art under 35 U.S.C. § 102(a)(2).

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3. *Discussion*

Petitioner asserts claims 1 and 18–20 are anticipated by Lindbo '178. Pet. 17–36. Patent Owner disputes Petitioner's contentions. PO Resp. 14–30. Based on the complete record, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 18 are anticipated by Lindbo '178.

a) *Claim 1*

(1) *Preamble*

Claim 1's preamble recites “[a] remotely operated vehicle assembly for picking up storage bins from an underlying storage system.” Ex. 1001, 11:64–65.

Petitioner argues that Lindbo '178 discloses “robotic devices for handling storage containers or bins in a store comprising a grid of stacked units.” Pet. 19 (citing Ex. 1003, 1:8–10). Petitioner argues that the robots disclosed in Lindbo '178 are “under the control of a central computer” and include “controllers and communications devices” that allow them to be remotely operated. *Id.* (citing Ex. 1003, 4:28–29, 9:30–31).

Patent Owner does not provide any arguments specifically directed to the preamble of claim 1. *See* PO Resp. 14–30.

To the extent the preamble of claim 1 is limiting, we find Petitioner has shown sufficiently that Lindbo '178 discloses the preamble. *See* Pet. 19 (citing Ex. 1003, 1:8–10).

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(2) Claim limitation 1[a]¹²

Claim limitation 1[a] recites, “a vehicle body displaying a cavity for receiving a storage bin within the storage system.” Ex. 1001, 11:66–67.

For this limitation, Petitioner asserts Lindbo ’178’s Figure 6 shows the “robot includes a ‘cavity or recess [], known as a container receiving recess’ which is ‘sized to accommodate the bin.’” Pet. 19 (alteration in original) (citing Ex. 1003, 5:22–24, 9:16–20).

Patent Owner does not provide any arguments specifically directed to claim limitation 1[a]. *See* PO Resp. 14–30; Sur-reply.

Based on the complete record, we find that Petitioner has shown sufficiently that Lindbo ’178 discloses claim limitation 1[a]. *See* Ex. 1003, Figs. 6A–6B; Ex. 1008 ¶ 76.

(3) Claim limitation 1[b]

Claim 1 further requires: “a vehicle lifting device connected to the vehicle body for lifting the storage bin into the cavity.” Ex. 1001, 12:1–2.

For this limitation, Petitioner contends Lindbo ’178’s vehicle lifting device includes a “winch and a ‘grabber plate 110 . . . configured to grip the top of the container 106 to lift it from a stack of containers.’” Pet. 20–21 (alteration in original) (citing Ex. 1003, 8:64–9:4).

Turning to the reference, we find that Petitioner has explained sufficiently how Lindbo ’178 discloses this limitation. For example, we note Lindbo ’178 teaches that

FIG. 5 shows a load handling device 100 according to an embodiment of the invention. The load handling device 100

¹² Letter notations for claim limitations appear in the Petition and are referenced in this Decision for convenience.

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comprises a vehicle 102 equipped with a winch or crane mechanism 104 to lift a storage container or bin 106, also known as a tote, from above. The crane mechanism 104 includes winch cables 108 and a grabber plate 110. *The grabber plate 110 is configured to grip the top of the container 106 to lift it from a stack of containers 106 in a storage system*

Ex. 1003, 8:63–9:4 (emphasis added).

Patent Owner does not present arguments specific to this limitation.

See PO Resp. 14–16; Sur-reply.

(4) *Claim limitation 1[c]*

Claim 1 further recites:

driving means comprising:

a first set of vehicle wheels connected to the vehicle body allowing movement of the vehicle along a first direction within the storage system during use, and

a second set of vehicle wheels connected to the vehicle body allowing movement of the vehicle along a second direction in the storage system during use, the second direction being perpendicular to the first direction[.]

Ex. 1001, 12:3–11.

Petitioner argues that the driving means limitation should be construed to mean that the robot includes two sets of wheels, arranged perpendicularly, that allow the robot to move laterally in X- and Y- directions. Pet. 21–22. Petitioner further contends that Lindbo '178 teaches two sets of wheels with one set arranged to engage the first set of rails for movement in a first direction and another set to engage a second set of rails for movement in a second direction. *Id.* at 22 (citing Ex. 1003, 5:54–59; Ex. 1008 ¶ 83).

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Patent Owner does not present arguments specific to this limitation.

See PO Resp. 14–16; Sur-reply.

Based on the complete record, we observe Lindbo '178 teaches that:

The load handling device preferably includes a set of wheels for supporting the load handling device above the stacks. For example, lateral movement of the load handling device may be guided by rails disposed above the frame. The rails may be arranged in a grid pattern, allowing two-dimensional movement of the load handling device in the horizontal plane. *The wheels may engage with the rails. Two sets of wheels may be provided, with one set being arranged to engage with a first set of rails to guide movement of the load handling device in a first direction, and another set being arranged to engage with a second set of rails to guide movement of the load handling device in a second direction.*

Ex. 1003, 5:48–59 (emphases added). Based on at least this disclosure, we find that Petitioner has produced sufficient evidence that Lindbo '178 discloses this limitation.

(5) *Claim limitation 1[d]*

Claim 1 further recites:

a displacement arrangement coupled to the driving means comprising
a displacement motor configured to provide power to displace at least one of the first set of vehicle wheels and the second set of vehicle wheels means between a displaced state where the first or second set of vehicle wheels is displaced away from the underlying storage system during use, and a non-displaced state where the first or second set of vehicle wheels is in contact with the underlying storage system during use[.]

Ex. 1001, 12:14–25 (emphasis added).

Petitioner provides Figure 9 of Lindbo '178 with annotations shown below:

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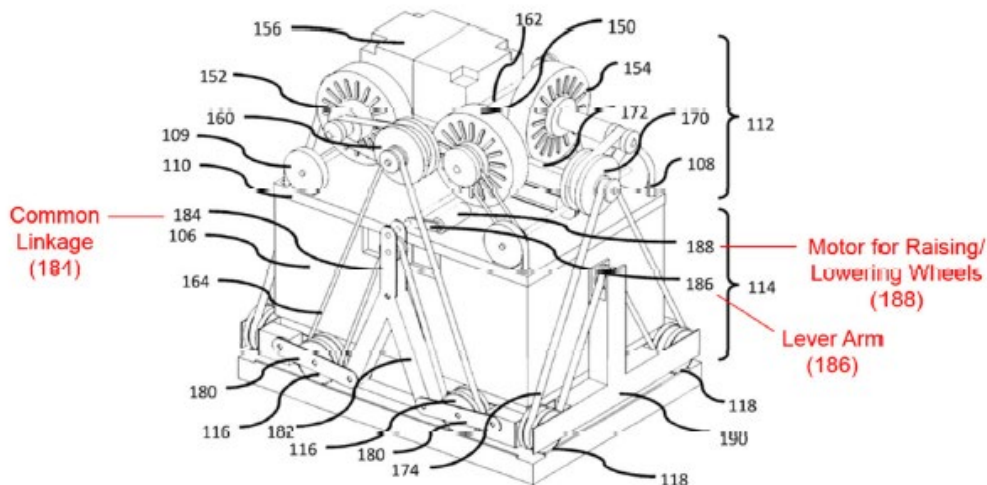


Figure 9

Petitioner’s modified Figure 9 that appears on page 23 of the Petition includes red annotations marking Common Linkage 181, Lever Arm 186, and Motor for Raising/Lowering Wheels 188. Pet. 23. Referring to the annotated Figure 9, Petitioner argues that “[e]ach wheel in the set is connected to an arm 180, and the arm for each wheel is connected to a ‘common linkage’ 184 ‘The upper end of the common linkage 184 is connected to a lever arm 186 that is moved by a motor 188.’” *Id.* at 24 (citing Ex. 1003, 10:21–27; Ex. 1008 ¶ 88). Petitioner adds that Lindbo ’178 discloses a motor that creates a force to pull or push the linkage, which moves the wheels up or down. *Id.* (citing Ex. 1008 ¶ 89).

Patent Owner contends that “Petitioner has failed to establish the alleged displacement motor in [Lindbo ’178] (*i.e.*, motor 188) provides power to displace *a full set of four wheels.*” PO Resp. 15 (emphasis added) (citing Ex. 2058 ¶¶ 75–78). Patent Owner relies on Dr. Janét’s testimony that motor 188 “appears to be only connected to *two wheels on only one side*

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of the robot, as shown in Figures 8-12.” *Id.* (emphasis added) (citing Ex. 2058 ¶ 77; Ex. 1003, Figs. 8–12). According to Dr. Janét “the figures and other text of the specification make it clear that common linkage 184 is only connected to two wheels and not a full set of four,” as required by the ’025 patent. *Id.* at 16 (citing Ex. 2058 ¶ 77; Ex. 1003, 10:27–37, Figs. 8–12). Patent Owner asserts that Lindbo ’178 “does not disclose that power from motor 188 on one side of the robot is provided to the wheels on opposite sides of the robot, let alone how the power would be transferred to the other side of the robot.” *Id.* (citing Ex. 2058 ¶ 77).

In the briefs, Petitioner and Patent Owner appear to agree that claim limitation 1[d] requires a *single* displacement motor to power *at least one of* the first set of vehicle wheels and the second set of vehicle wheels.” *See* Pet. Reply 6–13; PO Resp. 16 (“Petitioner has failed to show that [Lindbo ’178] discloses a displacement motor configured to provide power to displace either the first or second set of vehicle wheels[.]” (citing Ex. 2058 ¶¶ 77–78)). However, Patent Owner indicated that it disagreed with the claim construction of “a displacement motor” provided in the Final Determination by the ITC, which limited “a displacement motor” to a “single displacement motor that is configured to displace a set of wheels.” Confidential Tr. 13:6–10; *see* Ex. 1031, 121–29. Nevertheless, Patent Owner has not proposed a separate claim construction in its Patent Owner Response, nor did it raise concerns regarding the ITC construction in this proceeding. PO Resp. 5 (“Patent Owner does not believe that any term needs to be construed to address the issues raised in the Petition Several claim terms of the ’025 Patent were construed in the International Trade Commission Investigation . . . [b]ut Patent Owner is not aware of any relevance of those constructions

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to the issues in dispute here.”). Moreover, we observe that Patent Owner’s disagreement with the ITC’s construction relates to, among other things, whether claim 1 of the ’025 patent requires a *single* displacement motor or allows for more than one motor to displace a set of wheels. *See* Mot. Strike 1. However, even there, Patent Owner explains that this claim construction issue “does not impact whether [Lindbo ’178] discloses claim 1 of the ’025 Patent.” Public Tr. 54:8–16.

We agree with the parties that claim construction is *not* dispositive in this regard. Indeed, we determine that Petitioner has sufficiently shown that Lindbo ’178 teaches a *single* displacement motor 188 displaces a set of four wheels 116. Consistent with Petitioner’s arguments, Lindbo ’178 discloses that:

first set of wheels 116 can be raised clear of the rails or lowered onto the rails by means of a wheel positioning mechanism, as shown most clearly in FIGS. 9, 11 and 12. *Each wheel 116 is mounted on an arm 180 that is pivotally mounted at its outer end. An inner end of each arm 180 is connected to the lower end of a respective linkage 182. The upper ends of both linkages 182 are connected to the lower end of a common linkage 184. In turn, the upper end of the common linkage 184 is connected to a lever arm 186 that is moved by a motor 188. By operating the motor 188 to draw the common linkage 184 upwards, the first set of wheels 116 can be raised so that the second set of wheels 118 alone is engaged with the rails, allowing movement of the vehicle 102 in the Y-direction. By operating the motor 188 to push the common linkage 184 downwards, the first set of wheels 116 move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in FIGS. 9, 11 and 12. The vehicle 102 can then move in the X-direction.*

Ex. 1003, 10:18–37 (emphases added). In this way, Lindbo ’178 expressly discloses that: (1) *each* wheel 116 is mounted to an arm 180; (2) *each* arm

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180 is connected to *respective* linkage 182; (3) the linkages 182 are connected to a common linkage 184; and (4) common linkages 184 connect to lever arm 186 that is raised by motor 188. *Id.*

Patent Owner’s declarant, Dr. Janét, further concedes that a set of wheels 116 may include four wheels. During his cross-examination, Dr. Janét acknowledged that Lindbo ’178’s Figure 10 shows four wheels 116. Dr. Janét testified that “[i]t’s my understanding that there could be four wheels labeled 116. And if 116 is the set, then there’s four wheels in this particular set for this particular embodiment.” Ex. 1026, 99:10–13.

Still, Dr. Janét testifies that Lindbo ’178 “does not disclose that power from motor 188 on one side of the robot is provided to the wheels on opposite sides of the robot or a method for transferring that power to the other side of the robot.” Ex. 2058 ¶ 77. Nonetheless, Dr. Janét’s testimony is contradicted by Lindbo ’178’s express disclosure otherwise. Lindbo ’178 explicitly teaches that

[b]y operating the motor 188 to draw the common linkage 184 *upwards*, the *first set of wheels 116* can be raised so that the second set of wheels 118 alone is engaged with the rails, allowing movement of the vehicle 102 in the Y-direction. By operating the motor 188 to push the common linkage 184 *downwards*, the *first set of wheels 116* move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in FIGS. 9, 11 and 12.

Ex. 1003, 10:21–27 (emphases added). In other words, Lindbo ’178 discloses that the “first set of wheels 116,” i.e., all the wheels 116, are operated by motor 188. *Id.* Further, Dr. Janét acknowledged at his cross-examination that Figure 10 discloses one motor 188 for the set of four wheels 116. Ex. 1026, 99:14–21. Dr. Janét’s cross-examination testimony

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and Petitioner’s position are consistent with Lindbo ’178’s general disclosure that “[i]t will be appreciated that many different variations and modifications are possible. For example, *both sets of wheels may be powered by a single motor*, with a suitable transfer arrangement to direct power to the appropriate set of wheels.” Ex. 1003, 11:41–44 (emphasis added).

Based on the complete record, we determine that Petitioner has produced sufficient evidence that Lindbo ’178 discloses this limitation.

(6) *Claim limitation 1[e]*

Claim 1 also requires “wherein the displacement motor is situated in a lateral plane above the cavity.” Ex. 1001, 12:26–27.

Petitioner argues that Lindbo ’178 discloses “[b]y arranging the bulky components of the load handling device,’ such as motors, ‘above the container-receiving space, the footprint of the load handling device is reduced.” Pet. 26 (alteration in original) (citing Ex. 1003, 5:32–35).

Dr. Pfeifer, further testifies that “[a]s shown in Figure 12 and Figure 9 . . . , among the components placed above the cavity is the motor 188 . . . [that] corresponds to the displacement motor of claim 1 of the ’025 Patent.”

Ex. 1008 ¶ 94.

Patent Owner does not provide arguments specific to this limitation. See PO Resp. 14–16; Sur-reply.

We find that Petitioner has produced sufficient evidence that Lindbo ’178 discloses this limitation. See Pet. 26 (citing Ex. 1003, 5:32–35; Ex. 1008 ¶ 94).

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(7) *Claim limitation 1[f]*

Claim 1 further recites that the displacement motor is “further configured to generate a power that is converted to a vertically directed pressure force acting on the first or second set of vehicle wheels.” Ex. 1001, 12:27–30.

Petitioner contends that Lindbo ’178 discloses this limitation because motor 188’s rotational power rotates the lever arm to pull and push the set of wheels up or down to engage with rails. *See* Pet. 27. Dr. Pfeifer further explains that “by operating the motor 188, a connected lever arm ‘draw[s] the common linkage 184 upwards’ and that this upward force ‘raise[s]’ a set of wheels.” Ex. 1008 ¶ 99 (alterations in original) (emphases omitted). Dr. Pfeifer adds that Lindbo ’178 “discloses the use of a motor’s rotational power, translated to a vertical force through the use of a lever and linkage, to draw the wheels of a robot up and away from the storage grid.” *Id.* ¶ 100.

Patent Owner contends that Petitioner has failed to show that Lindbo ’178 discloses a displacement motor configured to provide power to displace either the first or second set of vehicle wheels and further configured such that the power “is converted to a vertically directed pressure force acting on the first or second set of vehicle wheels.” PO Resp. 16 (citing Ex. 2058 ¶¶ 77–78). For these contentions, Patent Owner relies upon arguments made with respect to claim 1[d]—Petitioner has not shown that Lindbo ’178’s motor 188 powers a set of wheels.

Based on the complete record, we find Petitioner’s arguments regarding this limitation sufficiently supported by the disclosure of Lindbo ’178 and Dr. Pfeifer’s testimony based on the same disclosure. *See* Ex. 1008 ¶¶ 99–100; Ex. 1003, 10:27–37. More specifically, Lindbo ’178 discloses

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that motor 188 raises and lowers first set of wheels 116 to engage or disengage wheels 116 from rails. Ex. 1003, 10:21–37.

(8) *Claim 1 Conclusion*

For all of the foregoing reasons, based on the complete record, we determine Petitioner has demonstrated by a preponderance of the evidence that Lindbo '178 anticipates claim 1 of the '025 patent.

b) *Claim 18*

Claim 18 depends from claim 1 and further recites:

18. A storage system for storage of bins, comprising:
the remotely operated vehicle assembly of claim 1;
a vehicle support comprising a plurality of crossing supporting rails directed perpendicular to each other,
a bin storing structure supporting the vehicle support, the structure comprising a plurality of storage columns,
wherein each of the plurality of storage columns is arranged to accommodate a vertical stack of storage bins.

Ex. 1001, 14:12–20.

Petitioner contends that Lindbo '178 teaches robotic devices for handling storage containers or bins in a store comprising a grid of stacked units. Pet. 29 (citing Ex. 1003, 1:8–10, 2:49–3:3, 5:7–15, 11:36–40). Further, Petitioner asserts that the rails or tracks forming the grid are arranged perpendicular to one another. *Id.*

Other than relying on arguments made for independent claim 1, Patent Owner does not otherwise contest Petitioner's assertions against claim 18. *See* PO Resp. 14–16. Accordingly, Patent Owner has forfeited any such challenge. *See* Paper 13, 8 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.”); *In re NuVasive, Inc.*,

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842 F.3d 1376, 1380–81 (Fed. Cir. 2016); Consolidated Trial Practice Guide
52 (Nov. 2019).

Based on the complete record, we find Petitioner’s arguments sufficiently supported by the disclosure of Lindbo ’178 and Dr. Pfeifer’s testimony. *See* Ex. 1008 ¶¶ 103–104; Ex. 1003, 1:8–10, 2:49–3:3, 5:7–15, 11:36–40. Thus, we are persuaded that Petitioner has demonstrated by a preponderance of the evidence that claim 18 is anticipated by Lindbo ’178.

c) Claim 19

Claim 19 depends from claims 1 and 18, and further recites, “[t]he storage system in accordance with claim 18, wherein the plurality of crossing supporting rails are paired to comprise: a first and second rail in the first direction and a third and fourth rail in the second direction.” Ex. 1001, 14:21–24.

Petitioner relies on Dr. Pfeifer’s testimony that Lindbo ’178 discloses double track rails in Figure 7. “Figure 7 clearly discloses that each grid space is framed by dual tracks on a single rail member, and shows this allows robots can be positioned over adjacent grid spaces to pass one another on the dual track rail.” Pet. 32 (citing Ex. 1008 ¶¶ 110–111). Petitioner further observes that the Examiner of U.S. Patent Application No. 15/905,294, which issued as Lindbo ’178, found that Figure 7 disclosed dual track rails. *Id.* at 30–31 (citing Ex. 1016, 2–3).

In response, Patent Owner contends that “Petitioner primarily relies on Figure 7 of [Lindbo ’178] as allegedly disclosing a ‘double track rail system’ . . . [b]ut Figure 7 has a poor resolution and is thus blurry and unclear.” PO Resp. 18 (citing Pet. 31–32; Ex. 1008 ¶ 108; Ex. 2058 ¶ 81); Ex. 1003, Fig. 7). Patent Owner argues that “[e]ven when Figure 7 is

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magnified, the image is not clear enough to conclude that there are two parallel tracks.” *Id.* (citing Ex. 2058 ¶ 81). Patent Owner also asserts that Figures 9, 10, and 11 of Lindbo ’178 do not disclose a raised edge or divider of a dual track system. *Id.* at 21–22.

We agree with Patent Owner.¹³ For convenience, Lindbo ’178’s Figure 7 is reproduced below:

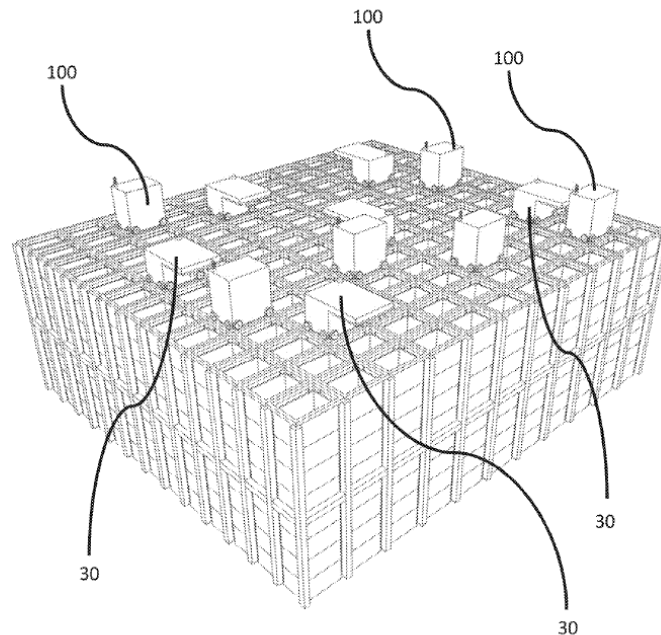


FIG. 7

Figure 7 is a schematic perspective view of a storage system with known load handler devices of the type shown in Figures 3A, 3B, and 3C and a plurality of load handler devices of the type shown in Figure 5 installed on the frame structure of Figures 1 and 2. Ex. 1003, 8:35–39. Lindbo ’178’s

¹³ As discussed above, both Petitioner and Patent Owner argue that the claim requires double tracks. Accordingly, we adopt the parties’ undisputed claim construction.

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written disclosure does not expressly describe the frame structure shown in Figure 7 as containing double track rails. Moreover, the frame structure of Figures 1 and 2 are described as “a known storage system.” *Id.* at 8:10–14. With respect to that storage system, Lindbo ’178 discloses that

frame structure 14 comprises a plurality of upright members 16 that support horizontal members 18, 20. A first set of parallel horizontal members 18 is arranged perpendicularly to a second set of parallel horizontal members 20 to form a plurality of horizontal grid structures supported by the upright members 16. The members 16, 18, 20 are typically manufactured from metal. The bins 10 are stacked between the members 16, 18, 20 of the frame structure 14, so that the frame structure 14 guards against horizontal movement of the stacks 12 of bins 10, and guides vertical movement of the bins 10.

The top level of the frame structure 14 includes rails 22 arranged in a grid pattern across the top of the stacks 12.

Ex. 1003, 2:48–61. Absent from this written disclosure is an express disclosure that the frame structure includes double track rails. *See id.* Thus, we agree with Patent Owner, that we are left to speculate as to whether the frame structure in Lindbo ’178’s Figure 7 uses single or double track rails.

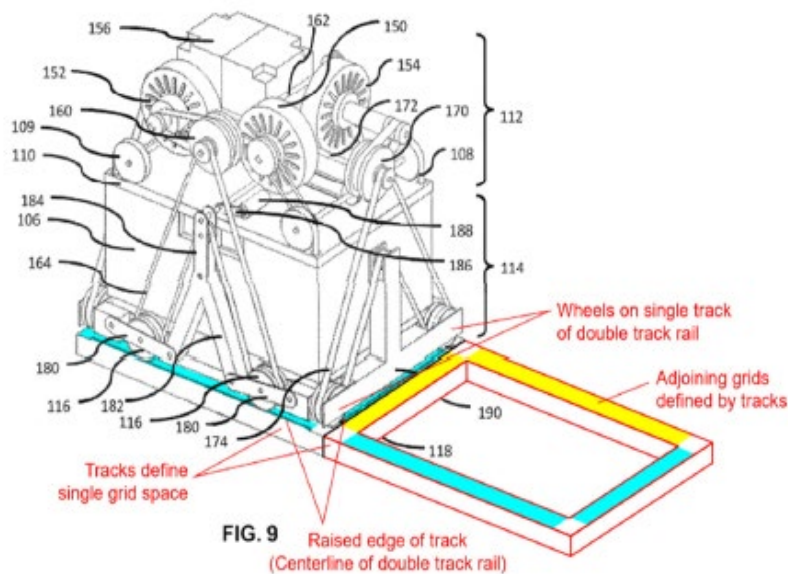
We are not the only ones to note this ambiguity. Petitioner, itself, in its separate unpatentability challenge based on Lindbo ’178 and Lindbo ’104 acknowledges that

[a] POSITA *who had difficulty in discerning the paired rail structure in Figure 7 of [Lindbo ’178] (which discloses all of the elements of claims 1 and 18, from which claim 19 depends) but wanted to implement the single space robots and more efficient structure that allowed single space robots to pass on adjacent grid spaces and “reduce[ed] the likelihood of one device obstructing the optimum path of another” (EX1003, 5:42-47), could look to [Lindbo ’104], the counterpart of [Lindbo ’178], to see the higher resolution version of Figure 7 disclosed in [Lindbo ’104] and its disclosure of paired, double track rails.*

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Pet. 51–52 (citing Ex. 1008 ¶ 170) (emphases added). In other words, Petitioner observes that a POSITA would have “difficulty” discerning double track rails in Figure 7. Likewise, the Examiner of U.S. Patent Application No. 15/905294, which issued as Lindbo ’178, found at one point that Figure 7 did not disclose dual track rails, but ultimately found otherwise as stated in the Notice of Allowance. *See* Ex. 1016, 2–3. The Examiner’s change in findings is also consistent with Patent Owner’s position that Figure 7 is unclear and creates confusion to even those accustomed to reviewing patent drawings. Additionally, we are not persuaded by Petitioner that the Examiner’s findings are binding on the instant proceeding.

In addition, we are not persuaded by Petitioner’s reliance on Lindbo ’178’s Figures 9, 10, and 11. Petitioner provides annotated Figures 9 and 11 to show double track rails. Annotated Figures 9 and 10 are reproduced below:



Annotated Figure 9 from page 33 of the Petition

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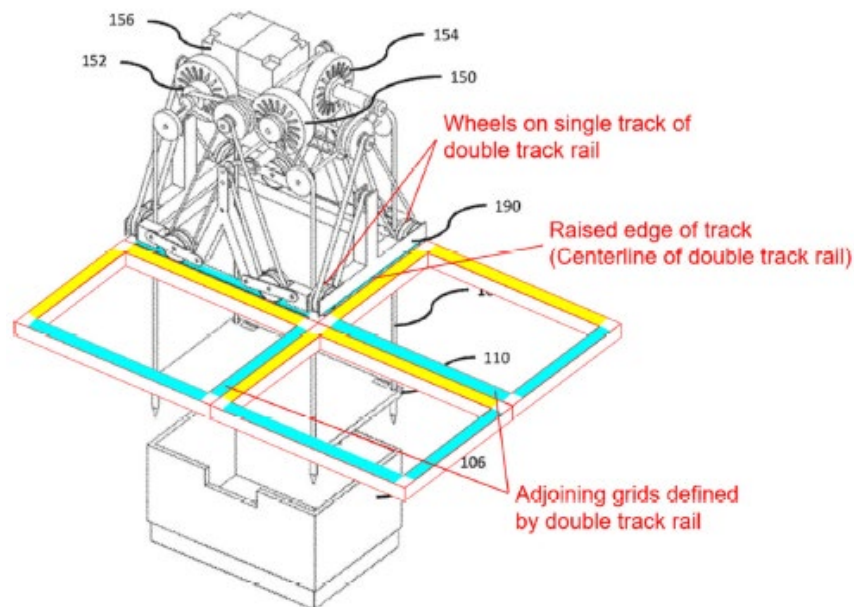


FIG. 11

Annotated Figure 11 from page 34 of the Petition

To Patent Owner’s point, neither of the original Figures 9 and 11 in Lindbo ’178 contain the “adjoining grids” defined by tracks that Petitioner has added. Petitioner contends that “a POSITA would understand that each grid space is defined by the tracks that surround it, and that to create the grid structure of the storage system from the single grid space shown in Figures 9 and 11, each rail necessarily would comprise two tracks divided by a centerline.” Pet. 33 (citing Ex. 1008 ¶ 113). Petitioner cites to Dr. Pfeifer’s Declaration for support. However, Dr. Pfeifer’s testimony in paragraph 113 is unpersuasive as it mirrors the language in the Petition without providing any additional support or basis for these assertions. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *Am. Acad. of Sci.*, 367 F.3d at 1368 (“[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the

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opinions expressed in the declarations.”); *One World Techs., Inc. v. Chevron (HK) Ltd.*, IPR2020-00884, Paper 55 (PTAB Nov. 3, 2021) (Testimony that parrots the petition “provides little help to the Board as fact finder, because the expert fails to fill his or her role to help us ‘understand the evidence or [] determine a fact in issue.’” (quoting Fed. R. Evid. 702(a))).

Accordingly, based on the complete record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that Lindbo ’178 anticipates claim 19 of the ’025 patent.

d) Claim 20

Claim 20 depends from claims 1 and 18 and further recites:

The storage system in accordance with claim 18,

wherein the lateral cross sectional area of the remotely operated vehicle assembly occupies at most the lateral cross sectional area of one of the plurality of storage columns within the bin storing structure, where the lateral cross sectional area of one of the plurality of storage columns corresponds to the lateral area limited by the distance from a first supporting rail an adjacent supporting rail parallel to the first supporting rail, the distance being measured from the centre line of each rail.

Ex. 1001, 14:25–34.

For this claim, Petitioner argues that Lindbo ’178 discloses that the load handling device occupies the space above only one stack of containers. Pet. 35 (citing Ex. 1003, 5:38–40, 7:22–24 (“[T]he load handling device has a footprint that occupies substantially only a single grid space in the storage systems.”)). Petitioner further contends that Figure 5 of Lindbo ’178 shows a robot with a cross-sectional area limited to that of a single storage bin. In addition, Petitioner argues that Figures 7 and 9 disclose a single space robot measured from the centerline of each rail. *Id.* at 35–37.

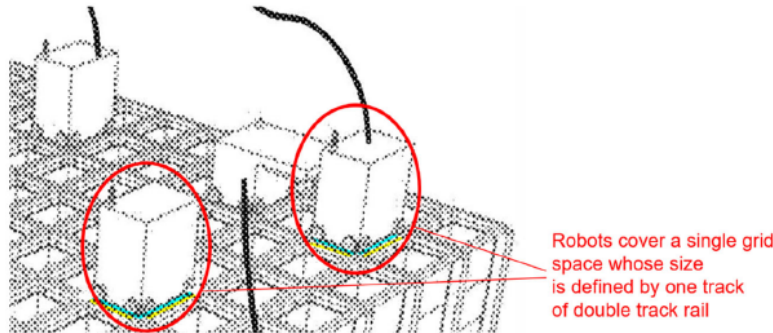
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Patent Owner contends that Figure 7 is not clear enough to show the location of the robot vehicle's wheels relative to the centerline of a rail. *Id.* at 27 (citing Ex. 1003, Fig. 7; Ex. 2058 ¶ 95). Additionally, Patent Owner contends that Lindbo '178's Figures 9–11 show that the robot vehicle's body extends past the edge of a rail. PO Resp. 26.

Patent Owner also argues that Petitioner has not adequately explained how the features of the embodiment described in Lindbo '178's Figures 5 and 7 relate to a different embodiment described in Figures 9–11. *Id.* at 28. According to Patent Owner, “[i]t is clear that the embodiment of Figures 5 and 7 is not compatible with that of Figures 8-12. The robots of Figures 5 and 7 have their wheels mounted to the *outside* of the vehicle ([Ex. 1003,] Fig. 7), while the robots of Figures 8–12 have their wheels *internal* to the vehicle body (*id.* at Figs. 8–12).” *Id.* at 29–30 (citing Ex. 2058 ¶ 99).

Based on the complete record, we find Patent Owner's arguments persuasive. We observe first that Lindbo '178's Figure 5 shows a load handling device that lifts a storage container into the handling device. Ex. 1003, Fig. 5. Without rails shown in Figure 5, however, it is difficult to discern from the drawing whether the load handling device teaches each of the dimensional limitations recited in claim 20. Considering Figure 5 with Figure 7 does not help in this regard. As discussed with respect to claim 19, the resolution of Figure 7 makes it difficult to confirm the details of the frame structure employed by the storage system. *Id.* at Fig. 7. As such, it is difficult to ascertain how much of the load handling device is within or outside of the rail tracks. This is the case even with Petitioner's enlarged version of Figure 7, reproduced below:

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Enlarged portion of Lindbo '178's Figure 7 provided on page 36 of the
Petition

As shown above, Petitioner's modified version of Figure 7 is marked with green and yellow to allegedly show the rails in relation to the load handling device. Yet, even so, we find it is unclear how much of the load handling device is within the grid space. Our review of Figure 7 is again consistent with Dr. Pfeifer's testimony that a POSITA may find it difficult to see the rails in Figure 7. *See* Ex. 1008 ¶ 170.

Additionally, we are not persuaded by Petitioner's arguments based on Figures 9–11 in Lindbo '178. Lindbo '178 expressly discloses that the load handling device shown in these figures have "the outer casing omitted." Ex. 1003, 8:40–46. As such, Figures 9–11 do not clearly show the arrangement of rails relative to a complete load handling device that includes the outer casing. *See id.* at Figs. 9–11. Moreover, the embodiment of Figures 5 and 7 appears to have wheels on the outside of robot's outer casing, whereas the wheels in the embodiment shown in Figures 8–11 are positioned inside of linkages that would presumably be within an outer casing. *See id.* at Figs. 5, 7. Because of this, we agree with Patent Owner that Petitioner has not sufficiently explained how the embodiments depicted

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in Figures 5 and 7 apply to the separate embodiment disclosed in Figures 8–11.

Based on the complete record, we determine that Petitioner has not demonstrated by a preponderance of the evidence that Lindbo '178 anticipates claim 20 of the '025 patent.

4. Conclusion

After reviewing the record and weighing the evidence offered by both parties, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1 and 18 are anticipated by Lindbo '178. We further determine that Petitioner has not shown, by a preponderance of the evidence, that claims 19 and 20 are anticipated by Lindbo '178.

E. Anticipation based on Lindbo '313 – Claims 19, 20

Petitioner asserts that claims 19 and 20 are anticipated by Lindbo '313. Pet. 37–50.

1. Public Availability Lindbo '313

As noted above, Lindbo '313 is Great Britain Patent Application No. 1314313.6 with a filing date of August 9, 2013. *See* Ex. 1004, Cover page. According to Petitioner, Lindbo '313 was made available for public inspection on May 13, 2015. Pet. 6–7.

In response, Patent Owner contends that Lindbo '313 does not qualify as prior art because Petitioner has not explained why the publication of Patent Cooperation Treaty (“PCT”) Application No. PCT/GB2014/052273 (which claims priority to Lindbo '313) by the World Intellectual Property Organization (WIPO) on *February 12, 2015* (Ex. 1007) shows that Lindbo '313 was publicly available as of that date. PO Resp. 6. Patent Owner separately asserts that Petitioner has not shown that Lindbo '313 was made

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available on *May 13, 2015* when Lindbo '104 (which also claims priority to Lindbo '313) was published. *Id.* According to Patent Owner, this is because the version of Lindbo '313 Petitioner relies on in the Petition (Ex. 1004) is a different copy of that application from the file history of PCT/GB2014/052273. *Id.* at 7 (citing Ex. 1004, 1–2).

In its Reply, Petitioner explains that Lindbo '313 became publicly available when: (1) WIPO published PCT Application No. PCT/GB2014/052273 on February 12, 2015; and (ii) Lindbo '313 itself was published by the United Kingdom International Patent Office on May 13, 2015. Pet. Reply 1.

Based on the complete record, Petitioner has persuaded us that Lindbo '313 was publicly available at least as of May 13, 2015. In particular, Petitioner directs us to PCT Rule 17.1(a) which provides that

[w]here the priority of an earlier national or international application is claimed under Article 8, a copy of that earlier application, certified by the authority with which it was filed (“the priority document”), shall, unless that priority document has already been filed with the receiving Office together with the international application in which the priority claim is made, and subject to paragraphs (b) and (b-bis), be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date[.]

PCT Rule 17.1(a) (emphases added).

Additionally, PCT Rule 17.2(c) states that

[w]here the international application has been published under Article 21, the International Bureau shall furnish a copy of the priority document to any person upon request and subject to reimbursement of the cost unless, prior to that publication:

(i) the international application was withdrawn,

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(ii) the relevant priority claim was withdrawn or considered, under Rule 26bis.2(b), not to have been made.

PCT Rule 17.2(c) (emphasis added).

Petitioner has provided a copy of the bibliographic data for PCT Application No. PCT/GB2014/052273, which published as WO2015019055 A1 on February 12, 2015. Ex. 1007. According to the bibliographic data, the PCT application claims priority to Lindbo '313. *Id.* And, per the requirements of PCT Rule 17.1(a), the applicant would have been required to submit a copy of Lindbo '313 to WIPO. Per PCT Rule 17.2(c), that copy of Lindbo '313 would have been publicly available by request once PCT Application No. PCT/GB2014/052273 published as WO2015019055 A1 on February 12, 2015.

Similarly, per Exhibit 1013, a copy of Lindbo '313 would have been publicly available on May 13, 2015 via the United Kingdom Intellectual Patent Office. Ex. 1013. Moreover, the version of Lindbo '313 available there appears to be identical to the copy provided by Petitioner in Exhibit 1004. *See* Ex. 1025, 2–29.

Accordingly, based on the complete record, we determine that Lindbo '313 was publicly available at least as of May 13, 2015 when it was made available for public inspection by the United Kingdom Intellectual Patent Office.

2. *Priority Date of Claims 19 and 20*

Petitioner acknowledges that the May 13, 2015 inspection date for Lindbo '313 is after the June 2014 priority date for the '025 patent. *See* Pet. 7, 38. Nonetheless, Petitioner argues that claims 19 and 20 are not entitled to the June 2014 priority date listed on the '025 patent. *Id.* at 38 (“The

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priority document to the '025 Patent, NO/773 (EX1009), does not disclose the inventions of claims 19-20, and thus these claims are not entitled to the NO/773 priority date of June 19, 2014. Specifically, there is no support in NO/773 for the double track rails or a single space robot. ([Ex. 1008 ¶¶ 45, 124–127].).”).

Patent Owner does not make any arguments specific to this issue. *See generally* PO Resp.; *see generally* Sur-reply.

We agree and find that claims 19 and 20 of the '025 patent are not entitled to the June 2014 date for the reasons given by Petitioner. As Petitioner points out, NO/773 does not refer to double track rails (claim 19) or a “lateral cross sectional area of remotely operated vehicle assembly” that “occupies at most the lateral cross sectional area of one of the plurality of storage columns within the bin storing structure” (claim 20). Moreover, we note that Figures 12(a)–(d) and the accompanying written description of double track rails and lateral cross-sectional area provided in the '025 patent do not appear in NO/773. For example, the '025 patent teaches that “[t]he inventive remotely operated vehicle 1 is in FIG. 12 (a)–(d) shown arranged on double track rails 13 constituting part of vehicle support 14.” Ex. 1001, 9:9–11. The '025 patent further provides that

[a]s is clearly seen in FIG. 12 the lateral cross sectional area of the inventive vehicle 1 occupies exactly the lateral cross sectional area of one underlying column 8, 8a, 8b, i.e. within the mid part of the double track rails 13 both in X and Y direction. The lateral cross sectional area of the vehicle 1 may of course be smaller or larger than the lateral cross sectional area of the column 8. However, vehicles 1 with a cross sectional area covering a single cell in the storage system 3, combined with use of double track rails 13, 13a-d (see FIG. 16 (d)), has the advantageous that it allows vehicles 1 to pass/cross at all four

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lateral sides while at the same time maintaining a high degree of stability.”

Id. at 9:15–27. Neither this disclosure nor anything like it appears in NO/773.

Absent an adequate written description in NO/773 of these claimed features, we agree with Petitioner that claims 19 and 20 are not entitled to the benefit of the filing date of that application. “It is elementary patent law that patent claims are entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides support for the claims of the later application, as required by 35 U.S.C. § 112.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008).

For the foregoing reasons, we determine that Petitioner shows, by a preponderance of the evidence, that dependent claims 19 and 20, lack written description support in NO/773.

Accordingly, we determine that Petitioner establishes sufficiently that challenged claims 19 and 20 of the ’025 patent are not entitled to claim priority to the June 19, 2014 filing date of NO/773, and the earliest effective filing date of the challenged claims is the June 16, 2015 filing date of the PCT Application No. PCT/EP2015/063415. Because of this, Lindbo ’313, which was publicly available by May 13, 2015, is prior art to claims 19 and 20 of the ’025 patent.

3. *Claim 19*

Claim 19 depends from claims 1 and 18, and further recites, “[t]he storage system in accordance with claim 18, wherein the plurality of crossing supporting rails are paired to comprise: a first and second rail in the

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first direction and a third and fourth rail in the second direction.” Ex. 1001, 14:21–24.

a) *Petitioner’s Contentions*

Petitioner asserts that Lindbo ’313 teaches all the limitations recited in independent claim 1 and required in dependent claim 19. Pet. 39–49. For the preamble and claim limitation 1[a], Petitioner contends that Lindbo ’313 teaches a robotic device for handling storage containers or bins in a grid of stacked units, and a robot with a cavity into which a storage bin can be lifted. *See* Pet. 39–40 (citing Ex. 1004, 1:6–7, 5:5, 5:36–37, 10:26–29, Figs. 5, 6a–6b, 8; Ex. 1008 ¶¶ 129–134). For claim limitation 1[b], Petitioner argues, among other things, that Lindbo ’313 discloses a winch and motor for lifting the container into the container-receiving space, and a gripper device to grip the container from above. *Id.* at 41 (citing Ex. 1004, 6:36–7:24, 10:10–13; Ex. 1008 ¶¶ 136–137). For claim limitation 1[c], Petitioner asserts that Lindbo ’313 teaches two sets of wheels with one set that engages a first set of rails in a first direction (e.g., X-direction) and another set to engage a second set of rails in a second direction (e.g., Y-direction). *Id.* at 42 (citing Ex. 1004, 3:14–19, 6:17–24; Ex. 1008 ¶¶ 139–140).

For claim limitations 1[d]–[f], Petitioner argues that Lindbo ’313 teaches set of wheels 116 are moved up and down by motor 188 to engage with rails. *Id.* at 43 (citing Ex. 1004, 11:35–12:6, Fig. 9; Ex. 1008 ¶¶ 142–143). Petitioner further contends that Lindbo ’313 discloses a “wheel lift motor,” that operates the “wheel positioning” arrangement, is located in a plane above the container-receiving recess, or cavity. *Id.* at 44–45 (citing Ex. 1004, 6:1–4, 6:33–34, 11:16; Ex. 1008 ¶¶ 145–149). Additionally, Petitioner contends that Lindbo ’313 teaches that operating motor 188 raises

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or lowers common linkage 184, which causes the set of wheels to move up from or down onto the rails. *Id.* at 46 (citing Ex. 1004, 11:38–12:6, Fig. 9; Ex. 1008 ¶ 151).

For claim 18, Petitioner relies on the arguments and evidence discussed above, but adds that Lindbo '313's teaches a grid frame containing a plurality of stacks of containers and lateral movement of the load handling device guided by rails disposed above the frame. *Id.* at 47 (citing Ex. 1004, 5:35–36, 6:18–19).

Petitioner further asserts that Figure 9 of Lindbo '313 clearly shows double track rails. *Id.* at 49. According to Petitioner, "Figure 9 shows both wheel sets 116, 118 confined to travel on a single portion, limited by the centerline, of the double track rails." *Id.* (citing Ex. 1008 ¶ 162) (emphasis omitted).

b) Patent Owner's Contentions

In response, Patent Owner contends that Lindbo '313 does not teach providing power or force to displace a full set of vehicle wheels. PO Resp. 31 ("Petitioner has failed to show limitations 1(d) and 1(f) (as labeled in the Petition at ix) are disclosed or rendered obvious by [Lindbo '313]."). Patent Owner argues that Lindbo '313's motor 188 appears to be connected to two wheels on only one side of the robot shown in Figure 9–12. *Id.* at 31–32 (citing Ex. 1004, 11:40–12:2, Figs. 8–12; Ex. 2058 ¶¶ 105–106).

Additionally, Patent Owner contends that Figure 9 does not clearly disclose double track rails because "the alleged tracks are not reasonably visible unless Petitioner shades in a conceptual rendition." *Id.* at 33 (citing Ex. 2058 ¶ 110). Patent Owner adds that Lindbo '313 does not contain any text that describes, explains, or even suggests double track rails. *Id.* (citing

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Ex. 2058 ¶¶ 110, 114). Patent Owner further argues that Lindbo '313's other figures also do not show double track rails. *See id.* at 34–35.

c) *Discussion*

Based upon the complete record, we note that Patent Owner does not contest Petitioner's arguments regarding claim 18 or limitations 1[a], 1[b], 1[c], and 1[e] recited in claim 1 of the '025 patent. Accordingly, Patent Owner has forfeited any such arguments regarding these limitations. *See* Paper 13, 8; *In re NuVasive, Inc.*, 842 F.3d at 1380–81; Consolidated Trial Practice Guide 52. Moreover, we agree with and adopt Petitioner's proffered evidence and arguments made with respect to these limitations. *See* Ex. 1004, 1:6–7, 3:14–19, 5:5, 5:35–37, 6:1–4, 6:17–24, 6:33–34, 6:36–7:24, 10:10–13, 10:26–29, 11:16, Figs. 5, 6a–6b, 8; Ex. 1008 ¶¶ 129–134, 136–137, 139–140, 145–149).

With respect to claim limitations 1[d] and 1[f], we find Petitioner's arguments sufficiently supported by the disclosure of Lindbo '313 and Dr. Pfeifer's testimony. In particular, we determine that Petitioner has sufficiently shown that Lindbo '313 discloses a *single* displacement motor 188 that displaces a set of four wheels 116. For example, consistent with Petitioner's arguments, Lindbo '313 recites that:

first set of wheels 116 can be raised clear of the rails or lowered onto the rails by means of a wheel positioning mechanism, as shown most clearly in Figures 9, 11 and 12. *Each wheel 116 is mounted on an arm 180 that is pivotally mounted at its outer end. An inner end of each arm 180 is connected to the lower end of a respective linkage 182. The upper ends of both linkages 182 are connected to the lower end of a common linkage 184. In turn, the upper end of the common linkage 184 is connected to a lever arm 186 that is moved by a motor 188. By operating the motor 188 to draw the common linkage 184 upwards, the first set of*

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wheels 116 can be raised so that the second set of wheels 118 alone is engaged with the rails, allowing movement of the vehicle 102 in the Y-direction. By operating the motor 188 to push the common linkage 184 downwards, the first set of wheels 116 move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in Figures 9, 11 and 12. The vehicle 102 can then move in the X-direction.

Ex. 1004, 11:35–12:6 (emphases added). Further, Dr. Janét conceded at his cross-examination that Lindbo '178's Figure 10 shows four wheels 116. Dr. Janét testified that “[i]t’s my understanding that there could be four wheels labeled 116. And if 116 is the set, then there’s four wheels in this particular set for this particular embodiment.” Ex. 1026, 99:10–13.

Moreover, Lindbo '313 explicitly recites that

[b]y operating the motor 188 to draw the common linkage 184 *upwards*, the *first set of wheels 116* can be raised so that the second set of wheels 118 alone is engaged with the rails, allowing movement of the vehicle 102 in the Y-direction. By operating the motor 188 to push the common linkage 184 *downwards*, the *first set of wheels 116* move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in Figures 9, 11 and 12.

Ex. 1004, 11:40–12:5 (emphases added). In other words, Lindbo '313 discloses that the “first set of wheels 116,” i.e., all the wheels 116, are operated by motor 188 to be raised or lowered, i.e., vertically. *Id.*

Dr. Pfeifer adds that

by operating the motor 188, the lever arm “draw[s] the common linkage 184 upwards” and that this upward force “raise[s]” a set of wheels. Similarly, using the motor to rotate the lever arm in the opposite direction “push[es] the common linkage 184 downwards” causing the set of wheels to move downwards to engage with the rails. (*See id.* 12:1-6; Fig 9.) The force provided by the motor for “drawing” upward and “pushing” downward the

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wheel set corresponds to the “vertically directed pressure force” recited in limitation 1(f).

Ex. 1008 ¶ 152.

Based on the complete record, including the disclosure and testimony discussed above, we find that Petitioner has produced sufficient evidence that Lindbo '313 discloses claim limitations 1[d] and 1[f].

Further, we are persuaded that Petitioner has sufficiently explained how Lindbo '313 discloses the double track rails required in claim 19 of the '025 patent. Consistent with Petitioner's position, Figure 9 of Lindbo '313 shows double track rails with a dividing ridge. For convenience, Lindbo '313's Figure 9 is provided below:

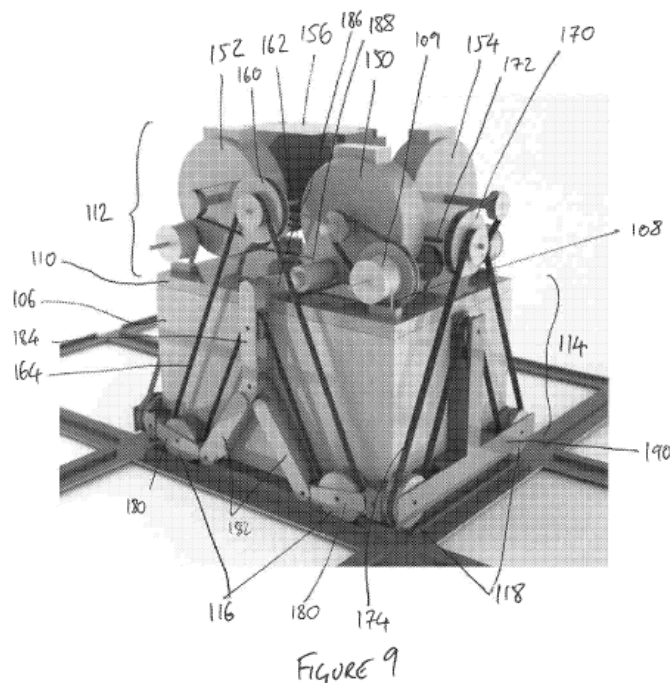


Figure 9 shows load handling device 100 with bin 106 lifted into recess 120. Ex. 1004, 12:11. Rails are shown in Figure 9, but are not labeled with reference numerals. *See id.* at Fig. 9. Nonetheless, Lindbo '313 states that

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Figure 9 shows the “first set of wheels 116 move downwards to engage with the rails and to lift the vehicle so that the second set of wheels 118 is lifted clear of the rails, as shown in Figure[] 9.” Ex. 1004, 12:4–5. Further, from the drawing, we discern that the rails include a raised centerline that divides the rails into two tracks. *Id.*; *see also* Pet. Reply 19 (Petitioner’s annotated Figure 9 marked with “Raised Centerline”).

Patent Owner takes the position that Figure 9 is too blurry to provide unambiguous details on how the wheels engage the rail tracks. PO Resp. 33–34; Sur-reply 5. According to Patent Owner, Dr. Janét testifies that “the alleged tracks are not reasonably visible unless Petitioner shades in a conceptual rendition.” PO Resp. 33 (citing Ex. 2011 ¶ 110). Patent Owner adds that Lindbo ’313 “does not contain any text that describes, explains, or even suggests double track rails.” *Id.* (citing Ex. 2011 ¶¶ 110, 114).

However, based on the written disclosure accompanying Figure 9, we determine Dr. Pfeifer’s testimony is better supported by Lindbo ’313. Dr. Pfeifer testifies that “Figure 9 shows both wheel sets 116, 118 confined to travel on a single track, limited by the centerline, of the double track rails.” Ex. 1008 ¶ 162. This testimony is supported by Lindbo ’313’s express teaching that load handling device 100 has wheels that engage with the rail tracks. Ex. 1004, 11:35. In Figure 9, wheels 116 are shown to be down, which is consistent with Lindbo ’313’s teaching that the wheels can be lowered to run on the rails. *Id.*

Dr. Janét’s contrary testimony is inconsistent with Lindbo ’313’s disclosure. Dr. Janét was asked at his deposition if Figure 9 teaches wheels engaging with the rails. He responded that “they’re not called rails. Hard to say what they are exactly.” Ex. 1026, 170:16–19. However, as discussed,

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Lindbo '313 explicitly teaches that wheels 116 and 118 can be raised or lowered onto the *rails* in Figure 9. Ex. 1004, 11:35–36. Thus, Dr. Janét's testimony contradicts and is not supported by Lindbo '313's disclosure and, therefore, is entitled to less weight than Dr. Pfeifer's, which is supported by the express teachings. *See, e.g., Yorkey*, 601 F.3d at 1284; *Am. Acad. of Sci.*, 367 F.3d at 1368.

Moreover, we note that Dr. Janét further testified that Figure 9 could show a “ridge” that is the rail itself. Ex. 1026, 175:10–19. In other words, Dr. Janét asserts that wheels 116 might rest or ride directly on a raised portion of the rails shown in Figure 9, rather than on another portion of the track. Yet, again, Dr. Janét's testimony ignores Lindbo '313 express disclosure that Figure 9 shows wheels 116 and 118 raised or lowered on rails. In Figure 9, wheels 116 are down and engaged with a portion of the rails, not riding on the raised ridge as Dr. Janét proposes is possible.

That being the case, we find Dr. Pfeifer's testimony regarding Figure 9's double track rails to be better supported. Figure 9 depicts, as discussed in the accompanying written disclosure, that a load handling device includes wheels that are engaged with the rails. Ex. 1004, 12:3–6. As shown, the relative placement of wheels 116 is on one side of a divider on the rails. Further, as shown, we agree with Dr. Pfeifer, that the rail is split into two portions that form double tracks. Ex. 1024 ¶¶ 24–25.

We are also not persuaded by Patent Owner's arguments regarding Lindbo '313's other figures (e.g., Figures 1, 2, 4, and 7). While those figures may or may not show single track rails, we determine that Figure 9 clearly shows double track rails, which is sufficient to support Petitioner's arguments. Accordingly, we conclude that Petitioner has demonstrated, by a

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preponderance of the evidence, that Lindbo '313 anticipates claim 19 of the '025 patent.

4. *Claim 20*

Claim 20 depends from independent claim 1 and dependent claim 18, and further recites:

wherein the lateral cross sectional area of the remotely operated vehicle assembly occupies at most the lateral cross sectional area of one of the plurality of storage columns within the bin storing structure, where the lateral cross sectional area of one of the plurality of storage columns corresponds to the lateral area limited by the distance from a first supporting rail an adjacent supporting rail parallel to the first supporting rail, the distance being measured from the centre line of each rail.

Ex. 1001, 14:25–34.

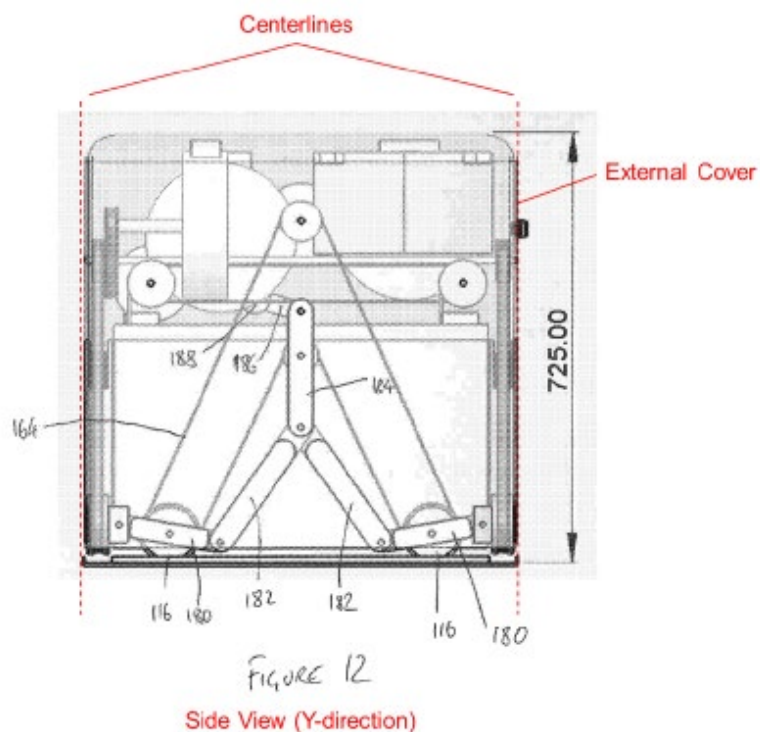
For this challenge, Petitioner contends that

[a] single space robot is disclosed in [Lindbo '313], *most clearly in Figure 9 . . . in which the robot's lateral dimensions are limited*, in both the x- and y- directions, to the distance from the outer edge of one track to the outer edge of another, which outer edge corresponds to the center line of one double track rail to the center line of the adjacent double track rail. ([Ex. 1008 ¶ 166].)

Pet. 49 (emphasis added). Petitioner adds that “[t]he specification of [Lindbo '313] also states that each robot occupies only a single grid space in the storage system[,]” which Petitioner contends discloses the required dimensions recited in challenged claim 20. *Id.* at 50 (citing Ex. 1008 ¶ 167; Ex. 1004, 5:38–39, 7:40-8:2, 10:39–11:11).

Like our discussion above with respect to Lindbo '178, we observe that Figure 9 in Lindbo '313 also does not show an outer casing. Ex. 1004, Fig. 9. As such, it does not clearly show whether the complete device has a “lateral cross sectional area of the remotely operated vehicle assembly [that]

NON-PUBLIC VERSION – PROTECTIVE ORDER MATERIAL occupies at most the lateral cross sectional area of one of the plurality of storage columns within the bin storing structure,” required by claim 20. Nevertheless, Figures 8, 11, and 12 depict the device with an outer casing. *Id.* at Figs. 8, 11, 12. In fact, Petitioner relies on Figure 12 in its Reply where it provides an annotated version of the drawing reproduced below:



Annotated Lindbo '313's Figure 12 provided on page 27 of Petitioner's Reply

In Petitioner's annotated Figure 12, Petitioner marks the centerlines in dashed red lines, which are just outside the outer casing. Pet. Reply 27. However, from Petitioner's own annotations, Figure 12 shows a structural component that extends out from the external cover and beyond one of the centerlines. *Id.* Both Dr. Pfeifer and Dr. Janét have referred to this structure

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as a possible “charging port.” Ex. 1026, 182:16–183:5; Ex. 2062, 74:11–18 (“Q. And just to establish some shorthand language. How would you like to refer to this component that’s on the other side of the center line? A. Why don’t we just call it a charging port? *We don’t know what it is.* It could possibly be a charging port. That’s how I believe Dr. Janét referred to it.” (emphasis added)). Further, Dr. Pfeifer conceded during cross-examination that the “charging port” extends beyond the centerline Petitioner has annotated in Figure 12. *See* Ex. 2062, 73:13–23.

On the whole, Dr. Pfeifer’s testimony and Petitioner’s annotated Figure 12 are consistent with Patent Owner’s position that the embodiments described and shown in Lindbo ’313’s Figures 8–12 do not clearly or unambiguously disclose the limitations recited in claim 20 of the ’025 patent. While Lindbo ’313 recites the advantages of single grid space robots (*see* Ex. 1004, 5:38–39, 7:40–8:2, 10:39–11:11), Petitioner has not sufficiently explained how this discloses the specific lateral cross-sectional area recited expressly in challenged claim 20. Moreover, when read in context with Figures 8–12, Petitioner has also not explained persuasively why Lindbo ’313, in its entirety, supports Petitioner’s position that a single grid space vehicle must be contained within the red centerlines that Petitioner has drawn onto Figure 12. *See* Pet. Reply 27. This is because Petitioner’s own annotated version of the figure clearly shows that components of the vehicle are outside of the centerlines. *Id.*

Accordingly, we conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that Lindbo ’313 anticipates claim 20 of the ’025 patent.

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F. Obviousness over Lindbo '178 – Claims 1, 18–20

Petitioner asserts that claims 1 and 18–20 would have been obvious based on Lindbo '178. Petitioner relies on the same arguments discussed above with respect to Petitioner's anticipation challenge based on Lindbo '178. Pet. 17–37. Absent, however, is any reasoning or explanation for Petitioner's separate obviousness challenge. *See id.* Rather, Petitioner acknowledges that

[c]laims are invalid as obvious where “the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103.

Id. at 18. Nonetheless, there is no explanation for what differences exist between Lindbo '178 and the challenged claims 1 and 18–20. *See id.* at 17–37.

An assertion of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); accord *In re NuVasive, Inc.*, 842 F.3d at 1383 (stating that “conclusory statements” amount to an “insufficient articulation[] of motivation to combine”; “instead, the finding must be supported by a ‘reasoned explanation’” (citation omitted)); *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”). For these reasons,

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the Petition is deficient with respect to this challenge. Accordingly, for the reasons discussed above, we conclude that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 1 and 18–20 would have been obvious over Lindbo '178.

G. Obviousness over Lindbo '313 – Claims 19, 20

Petitioner also asserts that claims 19 and 20 would have been obvious based on Lindbo '313. Petitioner relies on the same arguments discussed above with respect to Petitioner's anticipation challenge based on Lindbo '313. Pet. 37–50. Again, Petitioner does not provide any reasoning or explanation in the Petition for its obviousness challenge. *See id.* For example, in the Petition, there is no explanation for what differences exist between Lindbo '313 and the challenged claims 19 and 20. *See id.*

We note, however, that in its Reply, Petitioner argues for the first time that a POSITA would have modified the device shown in Lindbo '313's Figure 12. Pet. Reply 26 n.6. Relying on Dr. Pfeifer's testimony, Petitioner contends that "a POSITA would understand that any 'protrusion' in some of the figures is retractable or otherwise movable because if that were not the case, the depiction of a single-space robot and explanation of its benefits would make no sense." *Id.* (citing Ex. 1024 ¶ 37; Ex. 1004, 6:10–15).

First, we observe that this argument and rationale is not presented in the Petition and only appeared much later in Petitioner's Reply. That is, Petitioner failed to articulate a rationale for the modification of specific teachings in Lindbo '313 to achieve the claimed invention recited in claim 20. We do not generally consider such late theories. "Petitioner may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability." Patent Trial

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and Appeal Board Consolidated Trial Practice Guide 73 (Nov. 2019) (citing *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1077–78 (Fed. Cir. 2015)).

The Trial Practice Guide further explains that “‘Respond,’ in the context of 37 C.F.R. § 42.23(b), does not mean proceed in a new direction with a new approach as compared to the positions taken in a prior filing,” and “[w]hile replies and sur-replies can help crystalize issues for decision, a reply or sur-reply that raises a new issue or belatedly presents evidence may not be considered.” *Id.* at 74.

Second, we determine that, even if considered, Dr. Pfeifer’s testimony is not entitled to persuasive weight. Dr. Pfeifer postulates that the protrusion shown in Lindbo ’313’s Figure 12 must be retractable or movable because the protrusion would not “make sense” for a single-space robot. Ex. 1024 ¶ 37. Yet, at his cross-examination, Dr. Pfeifer acknowledged that he has no underlying basis for this opinion. Dr. Pfeifer concedes that Lindbo ’313 does not discuss the “protrusion” or teach that the protrusion is retractable or movable. One such exchange is provided below:

Q. Okay. And you would agree that that charging port isn’t discussed in the '313 application?

A. Yes, that is -- well, that's correct. *This device, whatever it is, is not discussed.* It's just shown in this figure.

Q. The '313 application doesn't say that the charging port is retractable or otherwise movable, right?

A. *It doesn't address it at all. So, no, it doesn't say that.*

Ex. 2062, 75:2–12 (emphases added). Moreover, Dr. Pfeifer acknowledged that he did not know what the protrusion was. *Id.* at 74:16–17. Instead, Dr. Pfeifer concluded that the protrusion, whatever it is, must be moveable to prevent obstruction. Ex. 1024 ¶ 37. But Dr. Pfeifer also conceded that

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there may be no interference at all depending on the specific dimensions of the charging port, which then calls into question his conclusion that the protrusion must be movable. *See* Ex. 2062: 76:3–19. In effect, then, what we have is unsupported conclusory statements by both Petitioner and Dr. Pfeifer, which cannot sustain an assertion of obviousness. There must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *accord In re NuVasive, Inc.*, 842 F.3d at 1383. Here, we determine that Petitioner’s arguments are both late and insufficient.

Accordingly, we determine that Petitioner has not demonstrated, by a preponderance of the evidence, that claims 19 and 20 would have been obvious over Lindbo ’313.

H. Obviousness over Lindbo ’178 and Lindbo ’104 – Claim 19

1. Overview of Lindbo ’104

Lindbo ’104 is Great Britain Patent Application No. GB2520104, filed on July 24, 2014, and published on May 13, 2015. Ex. 1005, codes (22), (43). Lindbo ’104 further claims priority to Lindbo ’313. *Id.* at code (30). Figure 7 of Lindbo ’104 is reproduced below:

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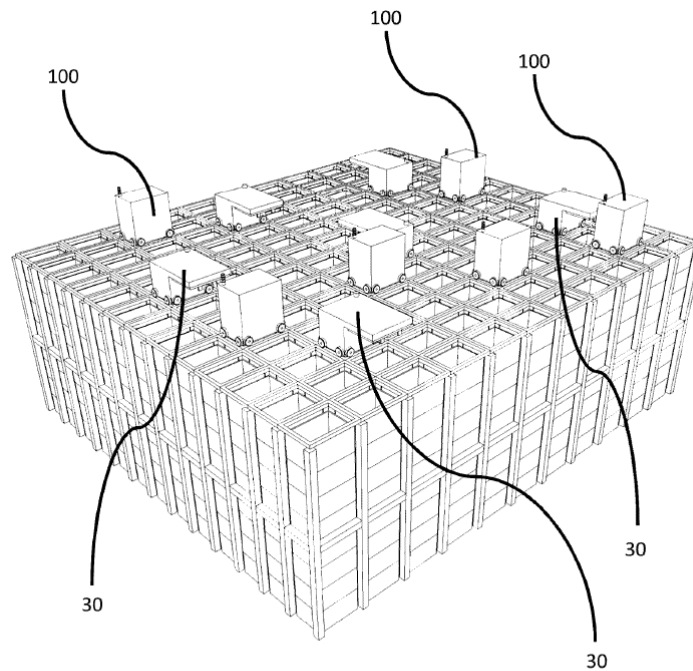


Figure 7

Figure 7 shows a schematic view of a storage system that includes a plurality of load handler devices. *Id.* at 10:20–22.

2. Discussion

Petitioner contends that claim 19 is “only entitled to an effective filing date of June 16, 2015” and that Lindbo ’104 is prior art as of its May 13, 2015 publication date. Pet. 50. Additionally, Petitioner contends that one of ordinary skill in the art would have understood Lindbo ’104’s Figure 7 to teach a double track construction shown in Petitioner’s annotated figure below:

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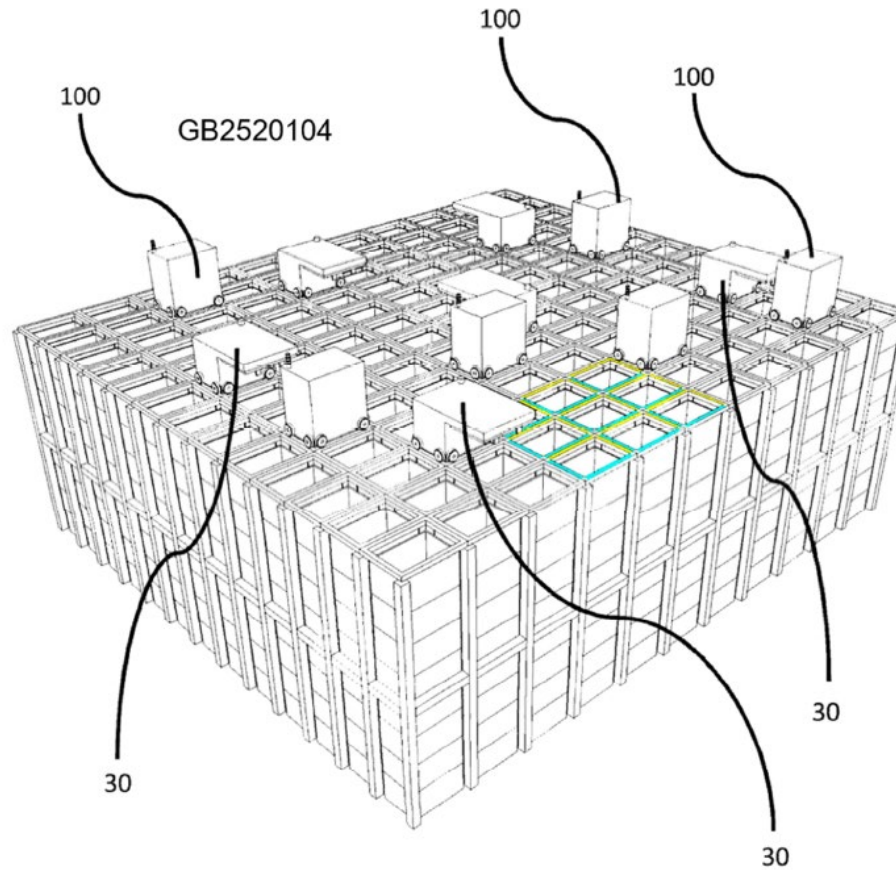


Figure 7

Id. at 51. In Petitioner’s annotated figure, Petitioner asserts that the yellow and green annotations indicate double tracks. *Id.* at 51–52 (citing Ex. 1008 ¶¶ 169–170).

Because Petitioner’s challenge based on Lindbo ’313 is dispositive with respect to challenged claim 19, we need not reach this additional asserted ground presented in the Petition. *See SAS Inst. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding that a petitioner “is entitled to a final written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020)

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(nonprecedential) (stating that the “Board need not address issues that are not necessary to the resolution of the proceeding,” such as “alternative arguments with respect to claims [the Board] found unpatentable on other grounds).

I. Obviousness based on Lindbo '901 and Bianco – Claims 1, 18–20

1. Overview of Lindbo '901

Lindbo '901 relates generally to “systems and methods for handling containers processed by at least partially-automated storage and retrieval systems.” Ex. 1010 ¶ 2. Figure 4 is reproduced below:

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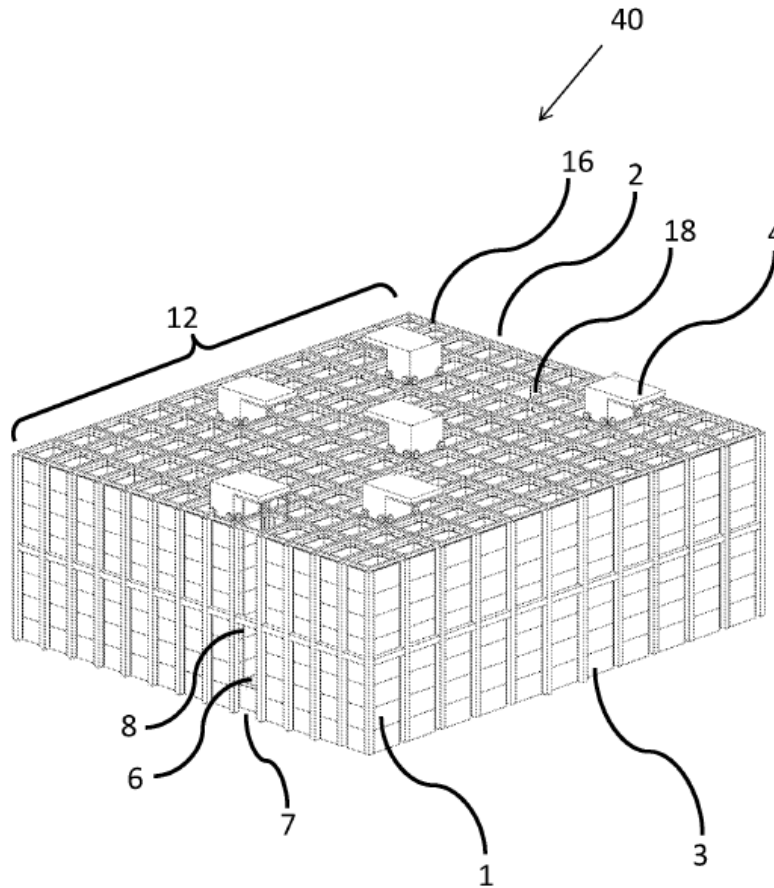


Figure 4

Figure 4 is a schematic diagram showing storage and retrieval system 40. *Id.* ¶¶ 28, 55. As shown in Figure 4, containers 1 are stored and retrieved from storage and retrieval system 40 by load handlers 4, which are configured to travel above grid 2 on rails 16. Load handler 4 may use hoist 8 to lower gripper 6 to engage and lift container 1 from the top of stack 3. *Id.* ¶ 55.

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Figure 6 is reproduced below:

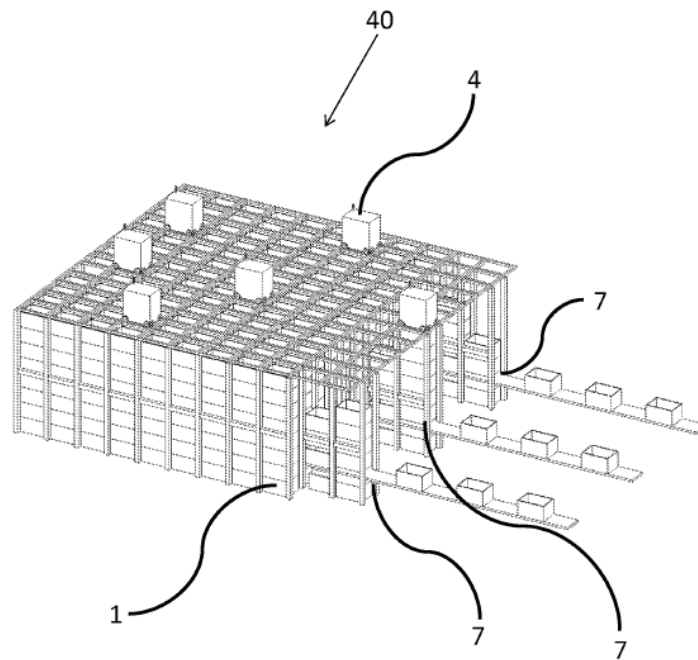


Figure 6

Figure 6 of Lindbo '901 shows another embodiment of system 40 with load handlers 4 and a plurality of buffering stack locations 7 for inducting and/or retrieving containers into and/or out of the storage and retrieval system 40.

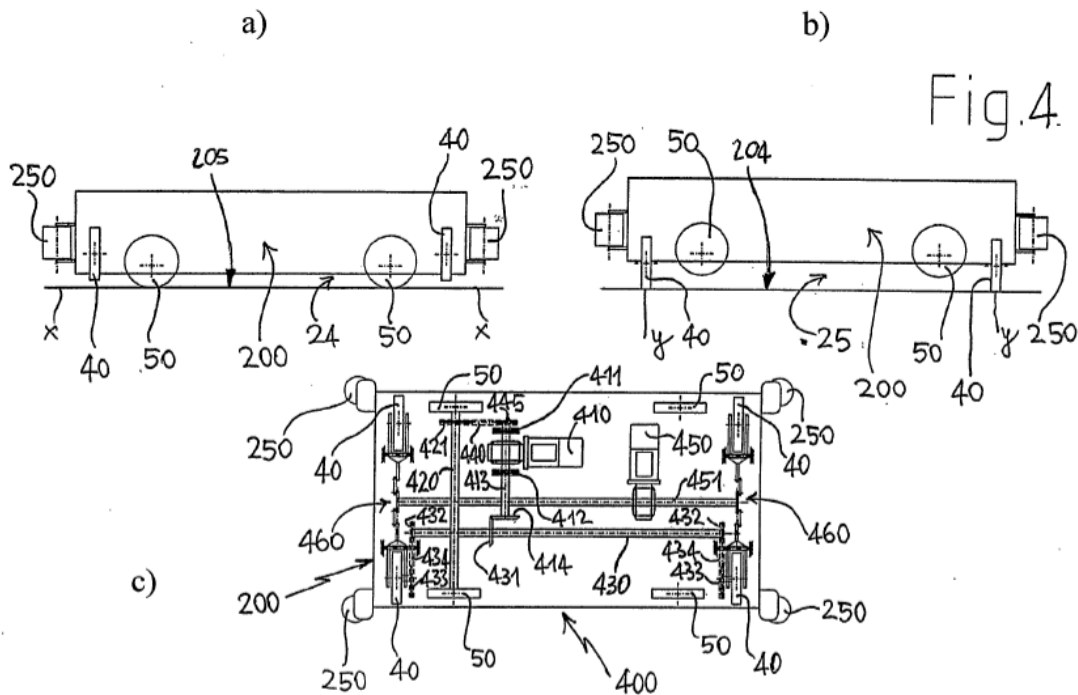
Id. ¶ 106.

2. *Overview of Bianco*

Bianco is generally directed to an autonomous vehicle for transferring load units in a high-density storage warehouse. Ex. 1011, code (54), 1:5–7.

Figures 4a–c are reproduced below:

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Figures 4a and 4b are enlarged scale views of autonomous vehicles for transferring load units. *Id.* at 3:25–28. Figure 4c is a plan view of the vehicle shown in Figures 4a and 4b. *Id.* at 3:29–30. In Figures 4a–c, vehicle 200 includes body 210, which carries wheels 40 “so that it can run parallel to the axis y and a system of wheels 50 so that it can run parallel to the axis x.” *Id.* at 6:3–6. According to Bianco, “[i]n the first and second configurations described above, the vehicle 200 runs by means of the system of wheels 40, whilst the system of wheels 50 is retracted.” *Id.* at 6:12–14.

3. Discussion

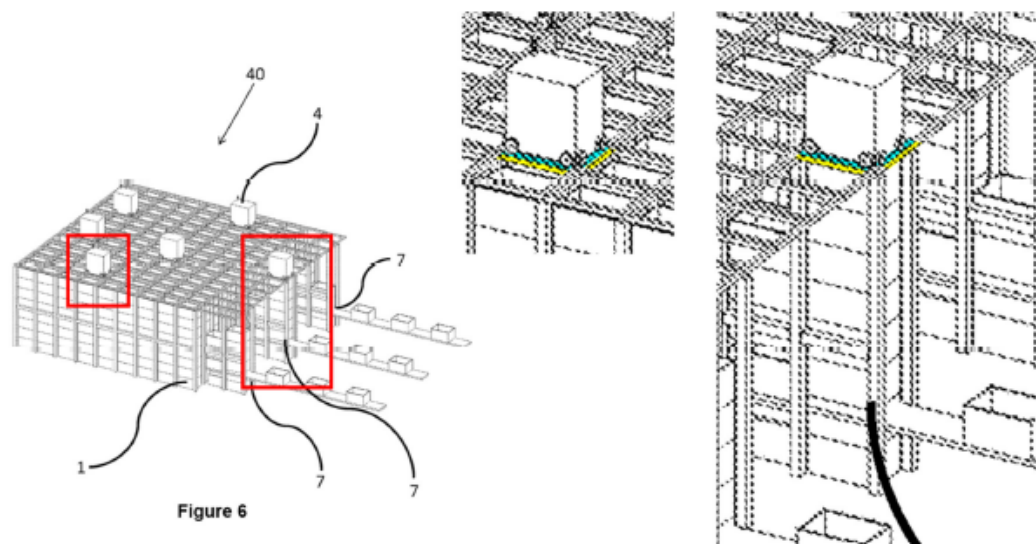
Petitioner asserts that claims 1 and 18–20 would have been obvious over Lindbo ’901 in combination with Bianco. Pet. 53–69.

Because Petitioner’s anticipation challenges based on Lindbo ’178 and Lindbo ’313 are dispositive with respect to challenged claims 1, 18, and 19, we need not reach this additional asserted ground presented in the

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Petition for claims 1, 18, and 19. *See SAS*, 138 S. Ct. at 1359; *Boston Sci.*, 809 F. App'x at 990.

For claim 20, Petitioner argues that Lindbo '901 “also discloses or renders obvious the storage system of claim 18, the double-track rails of claim 19, and the limitations of claim 20 for the same reasons as [Lindbo '178], because Figure 6 of WO/901 is substantially the same as Figure 7 of [Lindbo '178].” Pet. Reply 30. In the Petition, Petitioner provides annotated and enlarged versions of Lindbo '901's Figure 6. Pet. 69.



Annotated and enlarged versions of Figure 6 provided on page 69 of the Petition

As with Lindbo '178, we determine that Petitioner has not sufficiently explained how these modified figures show the specific lateral cross-sectional area dimensions recited in claim 20. For example, Petitioner has not explained what cross-sectional area is limited by “the distance being measured from the centre line of each rail.” *Id.* at 68–69.

Having reviewed the parties' arguments and evidence, we determine Petitioner has not demonstrated, by a preponderance of the evidence, that

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 claim 20 would have been obvious over the combination of Lindbo '901 and Bianco.

III. CONCLUSION¹⁴

For the reasons discussed above, Petitioner has demonstrated, by a preponderance of the evidence, that claims 1, 18, and 19 of the '025 patent are unpatentable. Petitioner has not demonstrated by a preponderance of the evidence that claim 20 is unpatentable.

In summary

Claim(s)	35 U.S.C. §	Reference(s)/Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1, 18–20	102	Lindbo '178	1, 18	19, 20
1, 18–20	103	Lindbo '178		1, 18–20
19, 20	102	Lindbo '313	19	20
19, 20	103	Lindbo '313		19, 20
19	103 ¹⁵	Lindbo '178, Lindbo '104		

¹⁴ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

¹⁵ As explained above, because we determine the challenged claim anticipated by Lindbo '313, we declined to address this ground.

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1, 18–20	103 ¹⁶	Lindbo '901, Bianco		20
Overall outcome			1, 18, 19	20

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1, 18, and 19 of the '025 patent are determined to be unpatentable;

FURTHER ORDERED that claim 20 of the '025 patent has not been determined to be unpatentable;

FURTHER ORDERED that Petitioner's Motion to Strike (Paper 42) is denied in part and dismissed in part;

FURTHER ORDERED that the parties shall file, within 10 days of entry of this Decision, a joint motion to seal this Decision, and shall provide, along with the joint motion, an exhibit with a proposed redacted public version of this Decision; and

FURTHER ORDERED because this is a final written decision, the parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

¹⁶ As explained above, because we determine that challenged claims 1, 18, and 19 are anticipated, we decline to address those claims with regard to this ground.

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