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Paper 63
Entered: May 3, 2016

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DAIFUKU CO., LTD. AND DAIFUKU AMERICA CORP.,
Petitioner,

v.

MURATA MACHINERY, LTD.,
Patent Owner.

Case IPR2015-00088
Patent 7,165,927 B2

Before KEN B. BARRETT, BARRY L. GROSSMAN, and BRIAN P. MURPHY, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Daifuku Co., Ltd. and Daifuku America Corp. (collectively, "Petitioner") filed a request for an *inter partes* review of claims 1, 2, 5, 11–16, 19, 20, and 25–36 of U.S. Patent No. 7,165,927 B2 ("the '927 patent," Ex. 1001). Paper 6 ("Pet."). Murata Machinery, Ltd. ("Patent Owner") filed a Patent Owner Preliminary Response. Paper 8 ("Prelim. Resp."). The Board instituted a trial for all asserted claims. Paper 9 ("Dec. on Inst."). Although Petitioner proposed four grounds of unpatentability, we instituted trial on only one asserted ground. Dec. on Inst. 16.

After institution of trial, Patent Owner filed a Patent Owner Response ("PO Resp.") to the Petition. Paper 25. Petitioner filed a Reply ("Reply") to Patent Owner's Response. Paper 36. Petitioner relies on the Declaration testimony of Dr. Robert Sturges in support of its Petition (Ex. 1028) and a Second Declaration of Dr. Sturges (Ex. 1040) and Declaration of Shuzo Nishino (Ex. 1037) in support of its Reply. Patent Owner relies on the Declaration testimony of Dr. Wilmer Bottoms (Ex. 2013), Mr. Toyu Yazaki (Ex. 2019), Mr. David Ben-Meir (Ex. 2023), and Mr. Masahiro Hatashita (Ex. 2038) in support of its Response.[1]

Patent Owner filed a Motion for Observations on Cross-Examination of Petitioner's Reply Witness. Paper 45 ("Mot. Observ."). Petitioner filed a Response to Patent Owner's Motion for Observations. Paper 54 ("Resp. Observ.").

[1] Both parties rely on confidential information covered by a Protective Order entered in this proceeding. Paper 20; Ex. 1033.

Patent Owner also filed a Motion to Exclude. Paper 47 ("PO Mot. To Exclude"). Petitioner filed an Opposition to that Motion (Paper 56, "Pet. Exclude Opp."), and Patent Owner filed a Reply (Paper 58, "PO Exclude Reply").

Oral hearing was conducted on February 4, 2016. The record contains a transcript of the hearing. Paper 62 ("Tr.").

The Board has jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has not shown by a preponderance of the evidence that claims 1, 2, 5, 11–16, 19, 20, and 25–36 are unpatentable as obvious over JPAP '213 and JPAP '237. We dismiss Patent Owner's Motion to Exclude as moot.

A. Related Proceedings

The parties identify the following as related proceedings regarding the '927 patent:

Murata Machinery USA, Inc. v. Daifuku Co., Ltd., No. 2:13-cv-00866 (D. Utah 2013), in which the '927 patent and two related patents are at issue. The related patents are U.S. Patent No. 8,197,172 ("the '172 patent") and U.S. Patent No. 7,771,153 ("the '153 patent");

IPR2015-00083 (the '172 patent, claims 1–20); IPR2015-00084 (the '153 patent, claims 6–14); IPR2015-00085 (the '153 patent, claims 6–11

and 14); and IPR2015-00087 (the ’927 patent, claims 1–5, 11–20, and 25–36);[2] and

Pending related U.S. Patent Application Nos. 10/682,809 (filed October 9, 2003), 13/492,341 (filed June 8, 2012), and 14/080,590 (filed November 14, 2013). Pet. 2; Paper 4 (“Patent Owner Murata Machinery, Ltd.’s Mandatory Notices”).

B. The’927 Patent

The ’927 patent, titled “Automated Material Handling System For Semiconductor Manufacturing Based On A Combination Of Vertical Carousels And Overhead Hoists,” pertains to an automated material handling system “that allows an overhead hoist to access work-in-process (WIP) parts directly from a WIP storage unit to increase the efficiency of the overall material handling system.” Ex. 1001, col. 2, ll. 29–32. Such systems may be employed in integrated circuit chip manufacturing. *Id.* at col. 1, ll. 38–40.

[2] The Board instituted *inter partes* review proceedings in IPR2015-00083 and IPR2015-00085. The Board denied institution in IPR2015-00084 and IPR2015-00087.

Figure 4 of the ’927 patent is reproduced below:

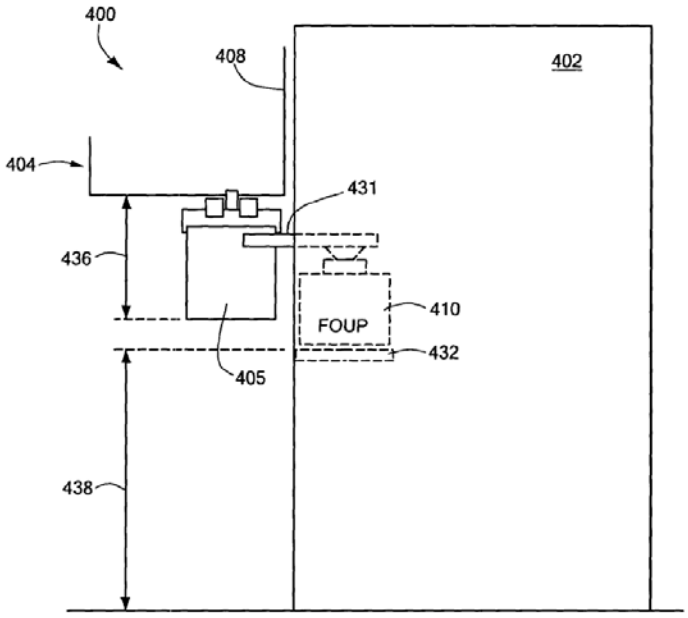


Figure 4 depicts translating hoist vehicle system 404 and vertical carousel stocker 402. Ex. 1001, col. 6, l. 54–56. The depicted system has suspended track 408 and overhead hoist transport vehicle 405 configured to travel on track 408. *Id.* at col. 6, ll. 56–59. “The vertical carousel stocker 402 includes a plurality of carousel storage bins such as a storage bin 432 disposed within the stocker housing.” *Id.* at col. 6, ll. 61–63. “The overhead transport vehicle 405 further includes an overhead hoist 431 having a gripper configured to top-load/unload the [Front Opening Unified Pod] FOUP 410 to/from the storage bin 432.” *Id.* at col. 7, ll. 1–4. In a preferred embodiment, hoist gripper 430 is mounted on a translating stage to allow the hoist to pick the FOUP, a type of cassette pod, from either side of the vehicle. *Id.* at col. 1, l. 58, col. 7, ll. 4–7.

C. Illustrative Claim

Claims 1, 14, 27, and 33 are independent claims. Claims 1 and 27 each recite a system, and claims 14 and 33 each recite a method. Claim 1, reproduced below, is illustrative:

> 1. An automated material handling system for transporting material between various locations within a product manufacturing facility, comprising:
>
> at least one housing unit configured to house a plurality of storage bins, each storage bin being configured to hold at least one unit of material; and
>
> an overhead hoist transport subsystem including at least one overhead hoist and at least one overhead hoist transport vehicle, the overhead hoist including a translating stage and a gripper portion coupled to the translating stage, the gripper portion being configured to grip the at least one material unit, the overhead hoist transport vehicle being configured to travel along a suspended track defining at least one predetermined route running adjacent to the storage bin housing unit, the suspended track being disposed external to the storage bin housing unit,
>
> wherein the overhead hoist transport vehicle is operative to carry the overhead hoist including the translating stage and the gripper portion along the suspended track to a first track position adjacent one of the plurality of storage bins,
>
> wherein, while the overhead hoist transport vehicle is at the first track position, the translating stage is configured to move the gripper portion laterally from a first position proximate to the overhead hoist transport vehicle to a second position proximate to said one of the plurality of storage bins,
>
> wherein a portion of the storage bin housing unit is at least partially open to allow the gripper portion of the overhead hoist to access at least one material unit directly from said one of the plurality of storage bins housed therein, and
>
> wherein the gripper portion of the overhead hoist is configured to access the at least one material unit directly from

> said one of the plurality of storage bins for subsequent transport along the track to a predetermined location within the product manufacturing facility.

Ex. 1001, col. 8, l. 38–col. 9, l. 9.

D. Applied References

Japanese Patent Application Publication No. HEI 10[1998]-45213, published Feb. 17, 1998 (as translated) ("JPAP '213"). Ex. 1005.

Japanese Patent Application Publication No. 2000-53237, published Feb. 22, 2000 (as translated) ("JPAP '237"). Ex. 1012.

E. Asserted Ground of Unpatentability

We instituted *inter partes* review on the asserted ground that claims 1, 2, 5, 11–16, 19, 20, and 25–36 are unpatentable as obvious over JPAP '213 and JPAP '237. Dec. on Inst. 16.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review, claim terms in an unexpired patent are given their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see also In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015*), cert. granted sub nom. Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 890 (2016). Under the broadest reasonable construction standard, claim terms are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire patent disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

No issue in this Decision requires explicit construction of any claim term. Accordingly, for purposes of this Decision, we do not provide explicit construction for any claim terms.

B. Obviousness over JPAP '213 and JPAP '237

Petitioner, relying on the Declaration of Dr. Robert H. Sturges (Ex. 1028), asserts that claims 1, 2, 5, 11–16, 19, 20, and 25–36 would have been obvious to a person of ordinary skill in the art over JPAP '213 and JPAP '237. Pet. 36–49. Patent Owner opposes, contests Petitioner's English language translation and interpretation of a disputed sentence in paragraph 7 of JPAP '213, and provides its own interpretation of that sentence. PO Resp. 9–28.

1. JPAP '213

Figure 1 of JPAP '213 is shown below.

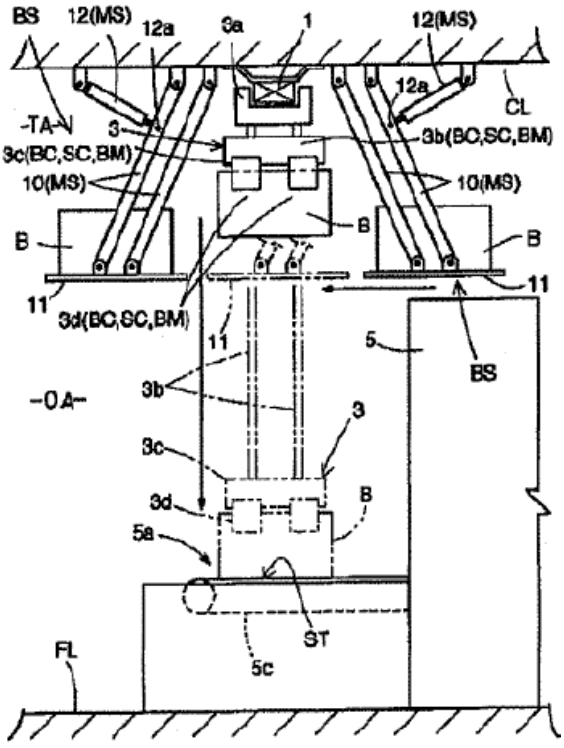


Figure 1 depicts an article conveyance facility. The depicted system has moving body 3 traveling on guide rail 1. Ex. 1005 ¶ 19. Moving body 3 comprises travel part 3a and vertically movable lifting unit 3c. *Id.* Extending from the lower end of lifting unit 3c is gripper 3d. *Id.* Article

retaining unit BS comprises horizontally swingable article mounting tables 11 with link mechanisms 10, which are activated by hydraulic cylinders 12, located on the sides of the path of the moving body. *Id.* ¶ 21. Article mounting tables 11 are normally positioned laterally to the side of moving body 3 to allow i) unobstructed travel of moving body 3 along the rail, and ii) "elevation of lifting part 3c of moving body 3 to allow transfer of the article [B] with respect to station ST." *Id.* When needed for temporary storage of article B, article mounting tables 11 move horizontally in a back-and-forth motion between the positions shown in solid lines in Figure 1 and the position shown in double-dot lines directly below moving body 3. *Id.* ¶ 22.

Each pair of linkage 10 and hydraulic cylinder 12, used to move mounting table 11 laterally back-and-forth, is referred to as the "article movement means MS" that sets an article B "retained in the lateral direction of the guide rail at a transfer position with respect to moving body 3." *Id.* For example, hydraulic cylinder 12 activates linkage 10 to move table 11 (holding article B) laterally to a position directly under moving body 3 (to the double-dot line position depicted in Figure 1 for table 11). *Id.* Moving body 3 lowers lifting unit 3c to allow gripper 3d to grip article B. *Id.* Lifting unit 3c and article B are then elevated to allow table 11 (now empty) to move back to its storage position (to the solid line position depicted in Figure 1 for table 11). *Id.* Article B being gripped by moving body 3 may then be lowered to workstation ST or conveyed along guiderail 1. *Id.* at 21. The process may be reversed such that article B may be lifted from workstation ST by moving body 3 then placed onto mounting table 11 for temporary storage. *Id.*

In Figure 1, gripper 3d is shown gripping article B. Figure 1 depicts article B located near travel part 3a. Also depicted is lifting unit 3c "lowered to place the article on the conveyer 5c of the article receiving part 5a of processing apparatus 5." *Id.* ¶ 29. In Figure 1, station ST is article receiving part 5a. *Id.*

2. Differences between JPAP '213 and the Claims of the '927 Patent

Petitioner does not address directly differences between the '927 patent claims and the disclosure of JPAP '213, but suggests that the differences are a laterally moving gripper (Pet. 39) and a cassette pod (*id.* at 36). *See id.* at 36. Petitioner acknowledges that JPAP '213 Figure 1 depicts and describes the lateral movement of article B on table 11 as being carried out by mechanical linkage 10 and hydraulic cylinder 12, referred to as the "article movement means MS" in JPAP '213 (Ex. 1005 ¶ 22). Pet. 17–18.

3. The disputed translation of JPAP '213 paragraph 7

Petitioner argues that JPAP '213 teaches that the vehicles "do the work of transferring the cassette pods B to and from the overhead locations BS, 11, by providing the transferring mechanism '*on the side of*' *the hoist vehicles 3*." *Id.* at 18 (emphasis added, quoting Ex. 1005 ¶ 7, Ex. 1028 ¶ 142). Petitioner relies, in particular, on a sentence in paragraph 7 of the English language translation of JPAP '213, the meaning of which is disputed by the parties. The translated sentence is as follows:

> When the apparatus having the configuration described in *Claim 4* is adopted, a *retaining unit transfer means* used for transferring articles between the article retaining unit and the moving body is provided *on the side of the moving body*.

Ex. 1005 ¶ 7 (emphasis added). Petitioner asserts that JPAP '213, through this quoted sentence, "expressly contemplates that the rail-mounted vehicle [moving body] 3 may be configured itself to do the work of transferring pods B laterally to and from the tables 11." Pet. 40 (citing Ex. 1005 ¶ 7; Ex. 1028 ¶ 225); *see* Reply 7. Petitioner relies on its interpretation of paragraph 7 as providing motivation for one of ordinary skill to modify moving body 3 in JPAP '213 Figure 1 to include extendable arm 42 of the conveyance truck transfer device disclosed in JPAP '237. Pet. 39–40 (citing Ex. 1028 ¶¶ 222–25).[3]

Patent Owner opposes Petitioner's interpretation of JPAP '213 paragraph 7, arguing that the quoted sentence from paragraph 7 does not "expressly contemplate" modifying the hoist vehicle of moving body 3 as argued by Petitioner. PO Resp. 11–20. Patent Owner argues, *inter alia*, that because Figure 1 already is an embodiment of the complete apparatus described in paragraph 7 there is no modification to be made. *Id.* at 12–15 (citing Ex. 1005 ¶¶ 7, 20, 22; Ex. 2013 ¶¶ 109–111; Ex. 1028 ¶¶ 137–144). Patent Owner also argues that Petitioner is misreading paragraph 7, because the "transfer means" in paragraph 7 refers to providing the hoist (wind-up cords 3b, lifting unit 3c, and gripper 3d) on the moving body. *Id.* at 16–17 (citing Ex. 2022 ¶¶ 2–5; Ex. 2013 ¶ 114). According to Patent Owner,

[3] Although the parties argue for certain differences in the level of skill in the art, the differences are not material to our decision. Therefore, we apply Petitioner's proffered skill level of one having at least an undergraduate degree in industrial or systems engineering and 3–5 years of experience designing systems and processes using automated material handling systems. Pet. 11 (citing Ex. 1028 ¶ 38); PO Resp. 8–9 (citing Ex. 2013 ¶ 15).

Petitioner's argument that paragraph 7 supports the concept of putting a lateral transfer mechanism on the side of an overhead hoist vehicle, such as moving body 3, is wrong. *See id.* at 16. Patent Owner further asserts that Petitioner's translator admitted that paragraph 7 does not suggest the retaining unit transfer means would move laterally. *Id.* at 16. Patent Owner also argues that its interpretation of JPAP '213 paragraph 7 is supported by a Japanese Intellectual Property High Court review of JPAP '213 paragraph 7.[4] *Id.* at 17 (citing Ex. 2018).

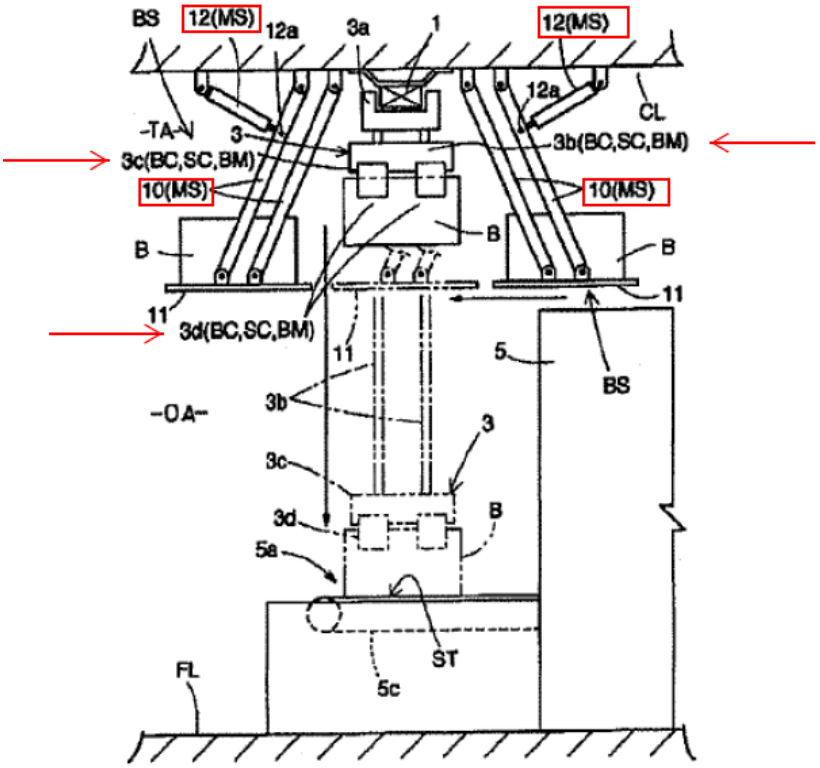
4. Analysis of JPAP '213 Paragraph 7

We begin our analysis with Claim 4 referenced in JPAP '213 paragraph 7. Claim 4, as translated, recites "wherein a retaining unit transfer means used for transferring the articles with respect to said article retaining unit is provided *on* said moving body." Ex. 1005, 3. Claim 4, as translated, characterizes the retaining unit transfer means as located "on" the moving body rather than "on the side of" the moving body as stated in paragraph 7. Therefore, we look to the detailed description of the retaining unit transfer means for clarification. JPAP '213 describes the retaining unit transfer means as a vertical hoist mechanism used when articles B are moved between swinging storage tables 11 and workstation ST located directly below moving body 3. Referring to Figures 1 and 2, JPAP '213 explains that "retaining unit transfer means BC" and "station transfer means SC" are "constituted within a single article transfer means BM *mainly comprising*

[4] For the reasons given by Petitioner in its Reply, which raise significant uncertainties concerning the context and import of the Japanese IP High Court decision relied upon by Patent Owner in Exhibit 2018, we do not give that decision any weight in our analysis. Reply 9–11.

cord 3b, lifting part 3c, and gripper 3d." *Id.* ¶ 20 (emphasis added). Petitioner's expert, Dr. Sturges, agrees that the hoist in Figure 1 of JPAP '213 is the retaining unit transfer means being described in paragraph 7. Ex. 1034, 141:10–13.

We reproduce below an enlarged view of JPAP '213 Figure 1, annotated by us with three arrows and four boxes.



Focusing first on the three arrows in annotated JPAP '213 Figure 1, above, Figure 1 consistently uses the acronyms BC, SC, and BM in parentheses following the alphanumeric designators for cords 3b, vertically movable lifting unit 3c, and gripper 3d. Ex. 1005 ¶¶ 19–20. The structures designated 3a, 3b, and 3c are part of a hoist mechanism located on moving body 3 and designed for vertical movement. *Id.* The description and depiction of the retaining unit transfer means as referring to vertical hoist

movement, rather than lateral movement, is reinforced by the description in paragraph 22 of JPAP ’213. JPAP ’213 paragraph 22 distinguishes the vertical lifting and lowering structures of the retaining unit transfer means from the lateral movement linkages and hydraulic cylinders of the article movement means MS. *Id.* ¶ 22. The indication of article movement means MS in parentheses following elements 10 and 12, shown in the four boxes of annotated Figure 1, further underscores the distinction being vertical and lateral movement components. Thus, the “retaining unit transfer means” in claim 4 of JPAP ‘213, as referenced in paragraph 7, refers to vertical hoist movement, not lateral transfer movement.

We also credit the Declaration testimony of Dr. Bottoms and Patent Owner’s translator, Mr. Yazaki, and the deposition testimony of Petitioner’s translator, Mr. Chu. Mr. Chu testifies that JPAP ’213 paragraph 7 does not “say anything about the transfer means moving an article laterally.” Ex. 1035, 30:23–31:5. Mr. Yazaki’s Declaration states that paragraph 7 expresses only that “the transfer means is on the moving body side, as opposed to being on the article retaining unit side” of the conveyance system and “not [] that the transfer means is on a lateral surface of the moving body facing the article retaining unit.” Ex. 2019 ¶ 5. Dr. Bottoms testifies that a person of ordinary skill would have understood the translated phrase “on the side of the moving body” in paragraph 7 to refer to the transfer means (the hoist) being located on the moving body side of the system rather than the storage side of the system, not physically positioning the transfer means on the lateral side of moving body 3. Ex. 2013 ¶ 114.

Dr. Bottoms also explains how JPAP ’213 distinguishes between vertical movement of the retaining unit transfer means and lateral movement

of the article movement means MS. *Id.* ¶ 116 (citing Ex. 1005 ¶ 22). Dr. Sturges' Declaration testimony, relied upon by Petitioner to rebut Patent Owner's argument and evidence (Reply 8–9, citing Ex. 1028 ¶¶ 142–44), provides no analysis of paragraph 7, claim 4, or the relevant description in JPAP '213. Rather, it mimics the error of the Petition in asserting that JPAP '213 "teaches a system where the *vehicle* does the work of transferring the pods B laterally to and from the tables 11." Ex. 1028 ¶ 142.[5]

Therefore, for the reasons given above, we find that JPAP '213 paragraph 7 does not expressly contemplate or teach an overhead transport vehicle (moving body 3 in Figure 1) configured to effect lateral movement of an overhead hoist and gripper.

5. JPAP '213 Figures 12 and 18

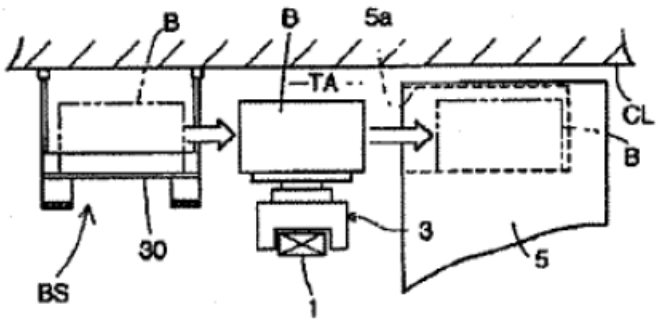
Petitioner argues that JPAP '213 Figures 12 and 18 disclose alternative embodiments of moving body 3 that have "their own 'article transfer means.'" Pet. 18–19 (citing Ex. 1005 ¶¶ 35, 39). This argument builds on Petitioner's incorrect interpretation of JPAP '213 paragraph 7. Petitioner gives the analogy of a flight attendant who picks up a backpack from the floor (a hoisting movement), carries it down the aisle (conveyance along a predetermined path) and then "transfers the backpack laterally

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[5] Patent Owner argues that other translations produced by Petitioner in the co-pending district court case are inconsistent with the translation relied upon by Petitioner in this *inter partes* review proceeding. PO Resp. 18. We note that the provenance of the other translations is not clear, and Patent Owner has neither clarified the context of their production nor cited to an affidavit attesting to the accuracy of the translations on which Patent Owner attempts to rely. 37 C.F.R. § 42.63(b). Regardless, the differences in the translations of paragraph 7 among the several translations do not add meaningfully to our analysis of the import of the disputed language.

toward and into the overhead compartment." *Id.* (citing Ex. 1028 ¶ 144). In its Reply, Petitioner again relies on the "lateral transfer means" shown in Figures 12 and 18 in support of the argument. Reply 9. Petitioner and Dr. Sturges, however, do not analyze the structure of moving body 3 in Figures 12 and 18, which has "the same configuration as moving body 4 . . . to move article B in the lateral direction" without a hoist. Ex. 1005 ¶¶ 35, 39, Figs. 12, 18; *see* PO Resp. 27–28 (citing Ex. 1005, Fig. 12; Ex. 2013 ¶ 121). Dr. Bottoms explains that moving body 3 in Figure 12 "runs on top of the rail" to move articles laterally, but does not teach or suggest combining the different embodiments of Figures 1 and 12. Ex. 2013 ¶ 121.

All of the embodiments of moving body 4 described in JPAP '213 are depicted as a lateral transfer unit (designated 17 in Figures 4–6 and designated 20 in Figures 9–11) without a hoist and gripper. Ex. 1005 ¶¶ 24, 25, 32–34. This is consistent with the purpose of moving body 4. Moving body 4 is designed to provide only lateral transfer of articles B between suspended rails 1 and 2, as the articles move into production processing and then exit from production processing. Ex. 1005 ¶¶ 16, 23, 30, Fig. 7. There is no indication of a need for a hoist and gripper on moving body 4 when transferring articles laterally between suspended rails 1 and 2. The embodiment of Figure 12 (Figure 18 is to like effect), below, depicts lateral transfer of articles B on top of moving body 3 without a hoist.



Ex. 1005, Fig. 12. As explained by Dr. Bottoms with respect to Figure 12, above, there is no teaching or suggestion in JPAP '213 that the vertical hoist mechanism of moving body 3 in Figure 1 should be combined with the lateral transfer mechanism of moving body 4 (depicted as moving body 3 in Figures 12 and 18), which are designed for different functions in the disclosed conveyance system. *See* Ex. 2013 ¶ 121.[6] This conclusion is confirmed by the descriptions of Figures 12 and 18. Ex. 1005 ¶¶ 35 (Moving body 3 in Figure 12 has "the same configuration as moving body 4 . . . to move article B in the lateral direction of the moving body to transfer article B."), 39 ("an article transfer means BM is provided to move article B on moving body 3 in the width [lateral] direction of the moving body to transfer article B.").

Petitioner, moreover, does not analyze the lateral transfer mechanism disclosed and described in JPAP '213 Figures 12 and 18 or provide evidence of how one skilled in the art would understand such a mechanism to work. Pet. 18–19 (citing Ex. 1028 ¶¶ 144); Reply 9. Not only does Dr. Sturges base his opinion on an incorrect interpretation of JPAP '213 paragraph 7, but he does not analyze or discuss the transfer mechanism ("article transfer

[6] We do not rely on Dr. Bottoms' discussion of the Japanese IP High Court decision referenced in paragraph 121 of his Declaration.

means") actually shown and described in Figures 12 and 18. *Id.* ¶ 144. In the absence of a more particularized analysis to explain the lateral transfer mechanism disclosed in the context of the various embodiments of JPAP '213, we are not persuaded by Petitioner's evidence or argument.

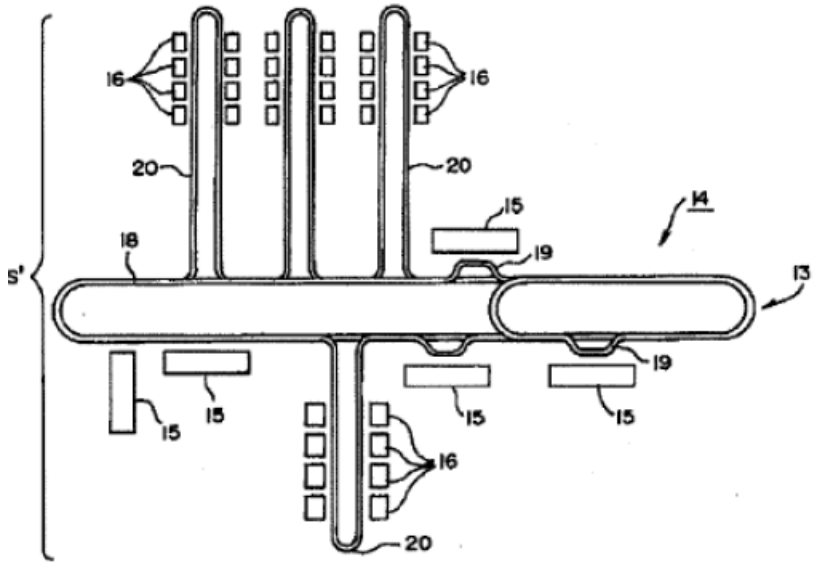
For the reasons given above, we are not persuaded that Figures 12 and 18 support Petitioner's argument that JPAP '213 discloses, teaches, or expressly contemplates a lateral transfer mechanism on the side of moving body 3 in Figure 1.

6. Petitioner's motivation-to-combine argument

Petitioner argues that a person of ordinary skill in the art would have been motivated to modify moving body 3 of JPAP '213 Figure 1 to incorporate the lateral transfer device of JPAP '237, because JPAP '213 "expressly contemplates that rail-mounted vehicles 3 may be configured itself to do the work of transferring pods B laterally to and from the tables." Pet. 40 (citing Ex. 1005 ¶ 7; Ex. 1028 ¶ 225). Petitioner argues that the proposed modification would have been obvious as an alternative to swinging the table 11 of JPAP '213. *Id.* Dr. Sturges emphasizes that because JPAP 213 "expressly contemplates" modifying moving body 3 in Figure 1 such that it could move articles B (cassette pods) laterally to and from the storage tables, it would have been obvious to one of skill in the art to modify moving body 3. Ex. 1028 ¶ 225. Dr. Sturges, however, does not explain why such an application would have been obvious to one of ordinary skill. Dr. Sturges merely re-emphasizes that "[t]he '213 publication expressly contemplates that the rail-mounted vehicle 3 may be configured itself to do the work of transferring pods B laterally to and from the tables 11." *Id.*

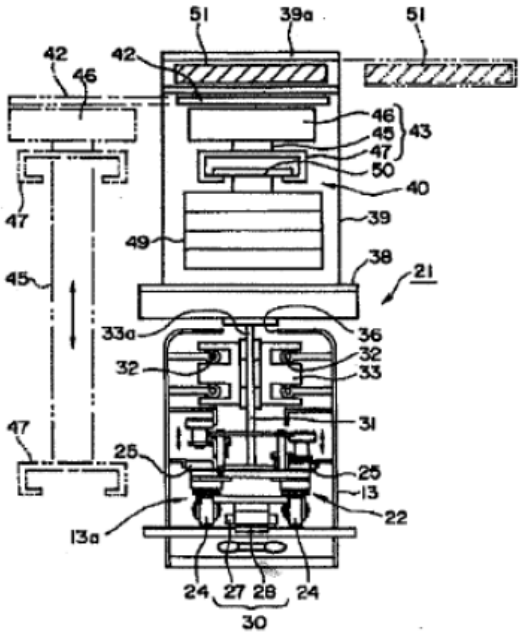
7. JPAP 237

JPAP ’237 Figure 3, below, depicts a conveyance system for transporting cassette boxes of semiconductor wafers in a manufacturing facility. Ex. 1012 ¶ 12.



Ex. 1012, Figure 3. The conveyance system of JPAP ’237 Figure 3, above, like the conveyance system depicted in JPAP ’213 Figure 7, may be an overhead system “disposed at the ceiling” that comprises central loop 18 of track 13 and several loops of branch tracks 20 oriented orthogonally to the central loop. *Id.* ¶¶ 12, 13. Each loop of track guides a “conveyance truck” (not shown) for conveying semiconductor cassettes to and from manufacturing process locations 16, which are located adjacent to each of the branch loops. *Id.* Stockers 15 house semiconductor cassettes and are arranged adjacent to smaller track branches 19.

JPAP ’237 Fig. 1, below, depicts a sectional view of conveyance truck 21 “running on” track 13. *Id.* ¶ 14.



Ex. 1012, Fig. 1. The lower part of the conveyance truck shown in Figure 1 comprises truck body 22 housed within track 13, including wheels 24, linear motor 30, and support strut 31 for supporting "goods stand" 38 and semiconductor cassette housing 39. *Id.* ¶¶ 14–17. The upper portion of the conveyance truck depicts "transfer device" 40 that includes extendable arm 42, fixed to the top of cassette housing 39a, which "advances and retreats freely in the horizontal direction . . . orthogonal to the running direction of the conveyance truck [shown in double-dot lines]." *Id.* ¶ 18. Transfer device 40 also includes hoist 43 (winch 46, wire 45, and chuck 47) for gripping semiconductor cassette box 49 at grip 50. *Id.* ¶ 19. When arm 42 is extended laterally "to the side of the conveyance truck 21 [double-dot lines]," the transfer device lowers chuck 47, grips semiconductor cassette box 49 (Figure 2), hoists the cassette box up, and retracts arm 42 such that semiconductor cassette pod 49 is housed within cassette housing 39 and ready for transport to storage stockers 15 and manufacturing process locations 16. *Id.* ¶¶ 12, 20, 22. Counterweight 51 "advances and retreats

freely in the direction opposite the extending direction of the arm 42" to stabilize the transfer device during operation. *Id.* ¶ 21.

Thus, transfer device 40 is configured to provide lateral and vertical movement of chuck 47, which acts as a gripper for semiconductor cassette pod 49.

8. Analysis

Dr. Sturges relies on an incorrect interpretation of JPAP '213 paragraph 7 as providing the motivation for one of ordinary skill in the art to add the lateral transfer device from the conveyance truck of JPAP '237 to moving body 3 in JPAP '213 Figure 1. Dr. Sturges, moreover, does not provide a reasoned analysis based on the disclosures and embodiments of JPAP '213 and JPAP '237, in the context of the knowledge and skill level of a degreed engineer with 3–5 years of experience developing automated material handling systems. Dr. Sturges does not explain why and how one of ordinary skill would have selected the lateral transfer device from the conveyance truck of JPAP '237 for use with moving body 3 in JPAP '213 Figure 1. Ex. 1028 ¶¶ 222–226. For example, there is no explanation of why one of ordinary skill would use the lateral transfer device from JPAP '237, given that mechanically moveable storage tables already are used to effect lateral transfer of articles B on both sides of moving body 3 in JPAP '213 Figure 1. *See id.* Even if the proposed modification were to be made, Dr. Sturges does not account for counterweight 51 in JPAP '237, which extends laterally to the *opposite* side of extendable arm 42, or explain why the counterweight would not interfere with the articles and storage tables located on the opposite side of moving body 3 in JPAP '213 Figure 1. *Id.*; Mot. Observ. 2–3 (quoting Ex. 2039, 70:22–71:15 ("Q. [Y]ou did not

provide any testimony that the hoist vehicle of the JPAP ’213 reference can utilize the robotic arm on one side while maintaining the swinging shelves on the other side; correct? A. That’s correct.”)). To the extent Petitioner argues that Dr. Sturges has provided evidence on this point (Tr. 83:9–13), such evidence has not been cited in the Petition or the Reply, nor have we located such evidence. Pet. 36–49 (citing Ex. 1028 ¶¶ 218–272); Reply 11–12 (citing Ex. 1028 ¶¶ 222–26); Mot. Observ., 1–2 (quoting Ex. 2039, 71:23–72:9 (“Q. [Y]ou did not address whether it would have been necessary to change the functional relationship between the swinging shelf and the hoist vehicle of the JPAP ’213 reference; correct? A. That’s accurate.”)).[7]

Dr. Sturges’ deposition testimony, regarding his motivation-to-combine testimony at paragraphs 222 and 223 of his Declaration, does not persuade us to take a different view. Ex. 1034, 163:12–166:10, 177:18–179:8 (Dr. Sturges indicating his deposition testimony concerning a reason to combine regarding the ’153 patent applies to the declaration testimony regarding the ’927 patent). Dr. Sturges acknowledges that in his Declaration he relies only on Petitioner’s interpretation of JPAP ’213 paragraph 7 as “expressly contemplate[ing]” the modification of moving body 3 in Figure 1 to transfer articles B laterally to and from storage tables 11. Ex. 1034, 165:9–17. Dr. Sturges further testifies that in his Declaration he provides “a pretty good example” of the teaching, suggestion, or motivation for one of

[7] To the extent Petitioner relies on “reasonable inferences” to be drawn from the disclosure of the prior art references, we are not persuaded by Petitioner’s argument. Resp. Observ. 4–5.

ordinary skill to make the asserted modification of JPAP '213 based on JPAP '237. *Id.* at 165:18–166:10 (referring to "the arrangement of old elements"). A review of the corresponding paragraph 224 of Dr. Sturges' Declaration, however, reveals nothing more than a conclusory paraphrasing of *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 (2007). There is no analysis of the prior art or discussion of why one of ordinary skill in the art, without the benefit of hindsight, would have been motivated to make the asserted modification of moving body 3 in JPAP '213 Figure 1, or how such a modification might work with a reasonable expectation of success. Ex. 1028 ¶ 224.

A conclusion of obviousness "requires more than a mere showing that the prior art includes separate references covering each separate limitation in a claim under examination." *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness requires the additional showing that a person of ordinary skill at the time of the invention would have selected and combined the prior art elements in the normal course of their work to yield the claimed invention. *Id.* Here we have rejected Petitioner's interpretation of JPAP '213 paragraph 7 that underpins its motivation to combine argument and Dr. Sturges' corresponding testimony. *See* Section II.B.3 above. Although Petitioner and Dr. Sturges do provide evidence of known alternatives for laterally transferring semiconductor cassette pods in overhead rail conveyance systems, (Pet. 39 (citing Ex. 1028 ¶ 222)), their analysis of a reason or motivation to combine the systems in the manner claimed in the '927 patent is lacking. The insufficiency of the evidence and analysis is particularly acute when the assertion that JPAP '213 paragraph 7 "expressly contemplates" such a combination is removed from

the analysis.

Petitioner's remaining argument, that it would have been obvious for a person of ordinary skill to make the asserted modification because it was one of a "finite number of identified, predictable solutions" and "an arrangement of old elements . . . yielding no more than one would expect from such an arrangement" is little more than a conclusory summary of *KSR* without the incumbent analysis based on the facts and evidence of the present case. Pet. 39–40 (citing Ex. 1028 ¶ 224); Reply 5–6, 11–12 (citing Ex. 1028 ¶¶ 222–26). For example, Petitioner argues that "any mechanical engineer would have understood that the number of moving mechanisms should always be reduced when possible" in support of its motivation to combine argument. Reply 11 (citing Ex. 1005 ¶ 7; Ex. 1028 ¶ 142-44). Petitioner's cited evidence does not support the statement; rather it relies on an incorrect interpretation of JPAP '213 paragraph 7. Neither Petitioner nor Dr. Sturges, moreover, provides a meaningful mechanical analysis or explanation beyond citing JPAP '213 paragraph 7 in support of Petitioner's motivation to combine argument.

In short, Petitioner's conclusory paraphrasing of *KSR* is insufficient to satisfy its burden, particularly without the support of Petitioner's interpretation of JPAP '213 paragraph 7. *See In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds 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.")(quoted with approval in *KSR*, 550 U.S. at 418). Therefore, for the reasons given above, we determine that Petitioner has not satisfied its burden of proving the asserted obviousness of claims 1, 2, 5, 11–16, 19, 20,

and 25–36 over JPAP ’213 and JPAP ’237 by a preponderance of the evidence.[8]

C. Patent Owner’s Motion to Exclude Evidence

Patent Owner seeks to exclude Exhibit 1038 and ¶¶ 3–4 of Exhibit 1040 filed by Petitioner with Petitioner’s Reply. Mot. Excl. 1 (Paper 47). Petitioner opposes the motion to exclude. Pet. Exclude Opp. 5–14 (Paper 56). Exhibit 1038 is a confidential product development plan dated September 25, 2002, and produced by Petitioner in this proceeding. Exhibit 1040 is a Second Declaration of Dr. Sturges, and paragraphs 3–4 contain his testimony explaining aspects of the confidential product development plan of Exhibit 1038. Petitioner relies on Exhibit 1038 and paragraphs 3–4 of Exhibit 1040 to rebut Patent Owner’s argument that Petitioner copied Patent Owner’s invention claimed in the ’927 patent. Reply 19, 21, 23. Patent Owner seeks to exclude Exhibit 1038 and paragraphs 3–4 of Exhibit 1040 as irrelevant (Fed. R. Evid. 401, 402), inadmissible hearsay (Fed. R. Evid. 801(c)), and unauthenticated (Fed. R. Evid. 901). Mot. Excl. 1–8. We do not rely on or address Patent Owner’s asserted objective evidence of nonobviousness or Petitioner’s rebuttal

[8] In view of our determination, we need not consider Patent Owner’s objective evidence of nonobviousness. *See Transocean Offshore Deepwater Drilling, Inc., v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (“objective evidence of nonobviousness . . . may be sufficient to disprove or rebut a prima facie case of obviousness”). PO Resp. 29–46; Reply 17–24.

evidence in our Decision. Therefore, Patent Owner's motion to exclude Exhibits 1038 and paragraphs 3–4 of Exhibit 1040 is *dismissed as moot.*

III. CONCLUSION

For the reasons given above, Petitioner has not shown by a preponderance of the evidence that claims 1, 2, 5, 11–16, 19, 20, and 25–36 are unpatentable as obvious over JPAP '213 and JPAP '237.

IV. ORDER

Accordingly, it is

ORDERED that claims 1, 2, 5, 11–16, 19, 20, and 25–36 of the '927 patent have *not* been shown by a preponderance of the evidence to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Exclude Evidence is *dismissed* as moot.

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

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