

Case IPR2024-00850  
U.S. Patent No. 11,472,632

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Exotec Product France SAS,  
Exotec North America Inc., and  
Exotec Product USA Inc.,  
Petitioners

v.

Opex Corporation,  
Patent Owner

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Case IPR2024-00850  
U.S. Patent No. 11,472,632

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**OPEX CORPORATION'S**  
**PATENT OWNER PRELIMINARY RESPONSE**

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**TABLE OF CONTENTS**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b><u>Page</u></b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| I. INTRODUCTION .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                  |
| II. SUMMARY OF THE '632 PATENT .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                  |
| A. Overview .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2                  |
| B. Prosecution History .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7                  |
| III. CLAIM CONSTRUCTION .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8                  |
| IV. OVERVIEW OF THE REFERENCES .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8                  |
| A. Raizer.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 8                  |
| 1. Raizer's Robots .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 9                  |
| 2. Raizer's Storage Structure .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 10                 |
| 3. Raizer's Navigation Control System .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 13                 |
| B. Hangzhou.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15                 |
| V. THE '632 PATENT CLAIMS ARE PATENTABLE.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 21                 |
| A. Petitioners' Proposed Modification Is Contrary To Raizer's<br>Purported Inventiveness, Changes Its Primary Principle Of<br>Operation And Renders Raizer Unsatisfactory For Its Intended<br>Purpose .....                                                                                                                                                                                                                                                                                                                                 | 22                 |
| B. Claims 1 And 11: Proposed Modification Would (1) Not Allow<br>Raizer's Robots To "Driv[e] The First Vehicle Along A First<br>Path Under A First One Of The Racks ... Wherein The First<br>Path Extends In A Direction Parallel To The First Aisle And<br>Spaced Apart From The First Aisle," Nor Provide (2) "A First<br>Horizontal Path That Extends Under The First Rack In A<br>Direction Parallel To The Aisle" Or (3) "A Second Horizontal<br>Path That Extends Under The First Rack In A Direction Parallel<br>To The Aisle" ..... | 28                 |
| VI. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(A).....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 34                 |
| VII. CONCLUSION.....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 36                 |

**TABLE OF AUTHORITIES**

|                                                                                                                       | <b><u>Page(s)</u></b> |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b><u>Cases</u></b>                                                                                                   |                       |
| <i>ASUSTeK Computer, Inc. et al v. LiTL LLC</i> ,<br>IPR2024-00532, Paper 20 (PTAB May 23, 2024) .....                | 26                    |
| <i>Chevron Oronite Co. LLC v. Infineum USA L.P.</i> ,<br>IPR2018-00923, Paper 9 (PTAB Nov. 7, 2018).....              | 37                    |
| <i>Deeper, UAB v. Vexilar, Inc.</i> ,<br>IPR2018-01310, Paper 7 (PTAB Jan. 24, 2019) .....                            | 37                    |
| <i>Harmonic Inc. v. Avid Tech., Inc.</i> ,<br>815 F.3d 1356 (Fed. Cir. 2016) .....                                    | 35, 36                |
| <i>In re Gordon</i> ,<br>733 F.2d 900 (Fed. Cir. 1984) .....                                                          | 27                    |
| <i>In re Magnum Oil Tools Int’l, Ltd.</i> ,<br>829 F.3d 1364 (Fed. Cir. 2016) .....                                   | 34                    |
| <i>Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.</i> ,<br>821 F.3d 1359 (Fed. Cir. 2016) .....            | 33                    |
| <i>Lumenis Be Ltd. et al v. BTL Healthcare Technologies AS</i> ,<br>IPR2021-01275, DI (PTAB Feb. 08, 2022) .....      | 37                    |
| <i>Medtronic, Inc. v. Teleflex Innovations SA RL</i> ,<br>69 F.4th 1341 (Fed. Cir. 2023) .....                        | 28                    |
| <i>Nanya Technology Corporation et al v. Monterey Research, LLC</i> ,<br>IPR2021-00171, DI (PTAB May. 26, 2021) ..... | 38                    |
| <i>Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal</i> ,<br>868 F.3d 1013 (Fed. Cir. 2017) .....           | 8                     |
| <i>Plas-Pak Industries, Inc., v. Sulzer Mixpac AG</i> ,<br>600 F.App’x 755 (Fed. Cir. 2015) .....                     | 28                    |

Case IPR2024-00850  
U.S. Patent No. 11,472,632

|                                                                                                  |    |
|--------------------------------------------------------------------------------------------------|----|
| <i>SAS Inst. V. Iancu</i> ,<br>138 S. Ct. 1348 (2018); .....                                     | 36 |
| <i>Shimano, Inc. v. Globeride, Inc.</i> ,<br>IPR2015-00273 Paper 40 (PTAB Jun 16, 2016).....     | 27 |
| <i>Trivasular, Inc. v. Samuels</i> ,<br>812 F.3d 1056 (Fed. Cir. 2016) .....                     | 27 |
| <i>Vivid Techs., Inc. v. Am. Sci. &amp; Eng’g, Inc.</i> ,<br>200 F.3d 795 (Fed. Cir. 1999) ..... | 8  |
| <i>Xerox Corp. v. Bytemark, Inc.</i> ,<br>IPR202200624, Paper 12 (PTAB Feb. 10, 2023).....       | 34 |

**Statutes**

|                            |    |
|----------------------------|----|
| 35 U.S.C. § 312(a)(3)..... | 33 |
| 35 U.S.C. § 314(a) .....   | 36 |

**Rules**

|                                                                 |    |
|-----------------------------------------------------------------|----|
| 37 C.F.R. § 316(b) .....                                        | 35 |
| 37 C.F.R. § 326(b) .....                                        | 35 |
| Office Patent Trial Practice Guide, November 2019 Edition ..... | 34 |

Case IPR2024-00850  
U.S. Patent No. 11,472,632

**PATENT OWNER'S EXHIBIT LIST**

| <b>IBM<br/>Exhibit No.</b> | <b>DESCRIPTION</b>                     |
|----------------------------|----------------------------------------|
| 2001                       | Declaration of Dr. William E. Singhose |

All emphasis has been added unless noted otherwise.

## **I. INTRODUCTION**

OPEX Corporation (“OPEX” or “Patent Owner”) submits this Patent Owner’s Preliminary Response (“POPR”) to the Petition ((Paper 4) “Petition”) filed on May 2, 2024. Petitioners (collectively “Exotec”) present one Ground challenging claims 1, 3-12, 14, and 23-27 (hereinafter “the challenged claims”) of U.S. Patent No. 11,472,632 (the ’632 Patent (“EX1001”)) based on the combination of U.S. Patent Publication No. 2017/0158430 (EX1005 or “Raizer”) and a Chinese Patent Publication Patent No. CN 109987366A (EX1006 or “Hangzhou”).

The Petition should be denied institution because Petitioners fail to show a reasonable likelihood that any challenged claim is unpatentable. First, as discussed in detail below, a person of ordinary skill in the art would not have combined Raizer with Hangzhou as the proposed modification would have eliminated what Raizer considered to be its inventive aspect, thereby destroying Raizer’s principle of operation and its intended purpose. Second, the proposed modification, as articulated by the Petitioner, would have led to a modified system that would not have been able to practice at least “driving the first vehicle along a first path under a first one of the racks ... wherein the first path extends in a direction parallel to the first aisle and spaced apart from the first aisle,” and “a first horizontal path that extends under the first rack in a direction parallel to the aisle,” and “a second horizontal path that extends under the first rack in a direction parallel to the aisle,”

recited in independent claims 1 and 11. Finally, given the various deficiencies of the Petition, the Board should discretionarily deny institution. Accordingly, Patent Owner respectfully requests that the Board deny institution of this Petition.

## **II. SUMMARY OF THE '632 PATENT**

### **A. Overview**

The '632 Patent “relate[s] to automated material and article handling systems which can be used in warehouse, storage and/or distribution environments.” EX1001, 1:12-15. Figure 1 of the '632 Patent, which is reproduced below, shows a material handling system that “includes one or more mechanisms for delivering items to and/or retrieving items from one of a plurality of locations, such as storage areas located in racks 800 or flow racks 600.” EX1001, 7:12-15. EX2001, ¶40.

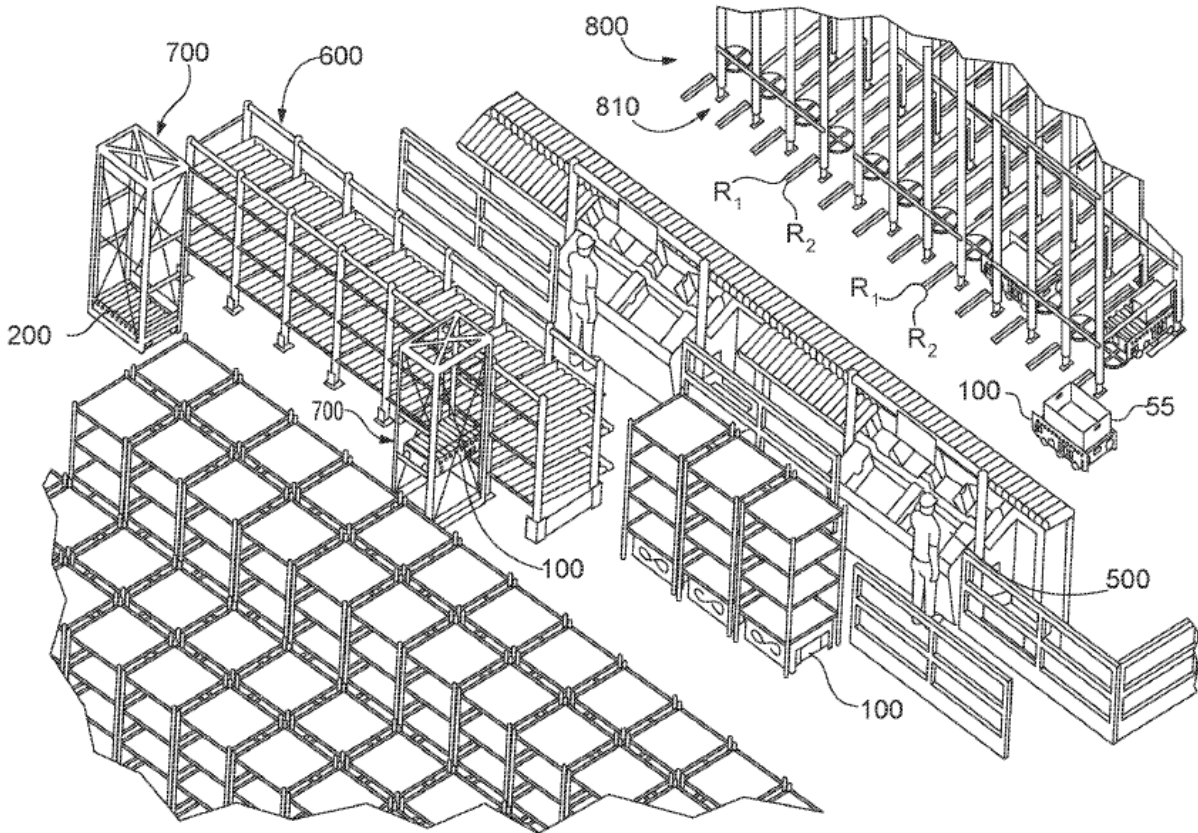


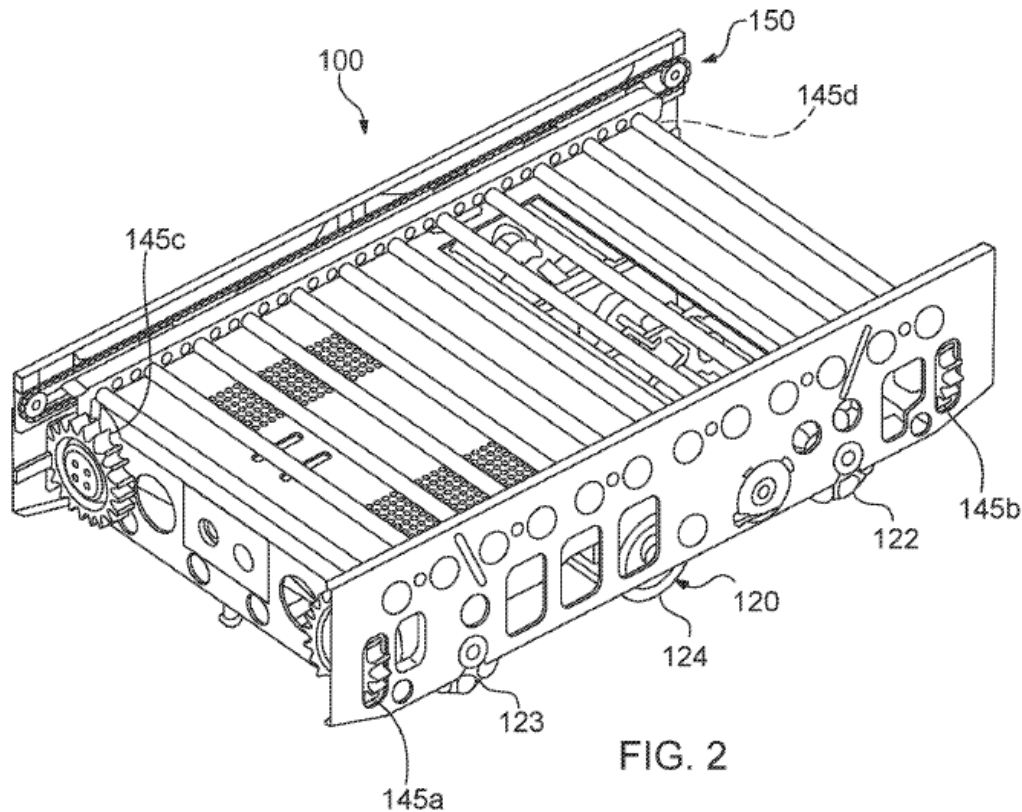
FIG. 1

EX1001, Figure 1.

According to the '632 Patent, “[t]he delivery mechanism may include one or more vehicles 100 that transport items. For instance, ...the vehicles may retrieve items from storage locations 820 in the racks 800 and deliver the items to a workstation 500 where an operator can retrieve the item from the vehicle.” EX1001, 7:15-20. EX2001, ¶41.

As the '632 Patent explains, “[t]he vehicles 100 may be autonomous systems that include an onboard power supply for driving the vehicle. The vehicles may also include a communication system for wirelessly receiving and transmitting control

signals between each vehicle and a control element...” EX1001, 8:1-5. Figure 2, which is reproduced below, “illustrates details of one of the vehicles 100 that are shown in [Figure] 1.” EX1001, 7:62-63. EX2001, ¶42.



EX1001, Figure 2.

“The vehicle illustrated in FIG. 2 includes a horizontal drive assembly 120 for driving the vehicle 100 in a horizontal direction. The horizontal drive 120 may be configured to drive the vehicle along a track or along an open horizontal surface, such as a floor.” EX1001, 8:9-14. The ’632 Patent also discloses that “[i]n addition to the horizontal drive mechanism 120 the vehicle may also include a vertical drive

mechanism [] for driving the vehicle 100 vertically within the rack 20.” EX1001, 9:12-14. EX2001, ¶43.

The vehicles disclosed in the ’632 Patent “may also include an optional transfer mechanism for transferring items between the vehicle and a destination, such as a storage location. For instance, the transfer mechanism 150 [shown in Figure 2] may be operative to transfer an item between a platform surface of the vehicle and one of the plurality of destination areas 820.” EX1001, 10:1-6. EX2001, ¶44.

The ’632 Patent discloses that “[t]he vehicles are configured to drive horizontally along a path that may extend along a path under the racks that is parallel to the aisles. Additionally, the vehicles may be operated to turn while the vehicle is positioned under one of the racks.” EX1001, Abstract. Additionally, “[t]he vehicles may travel under the racks and cross one or more aisles to reach a particular column in one of the aisles.” EX1001, Abstract. EX2001, ¶45.

Specifically, Figure 7, which is reproduced below, “illustrates a plurality of vehicles in different orientations relative to the racks 800 and the storage locations 820.” EX1001, 17:7-9.

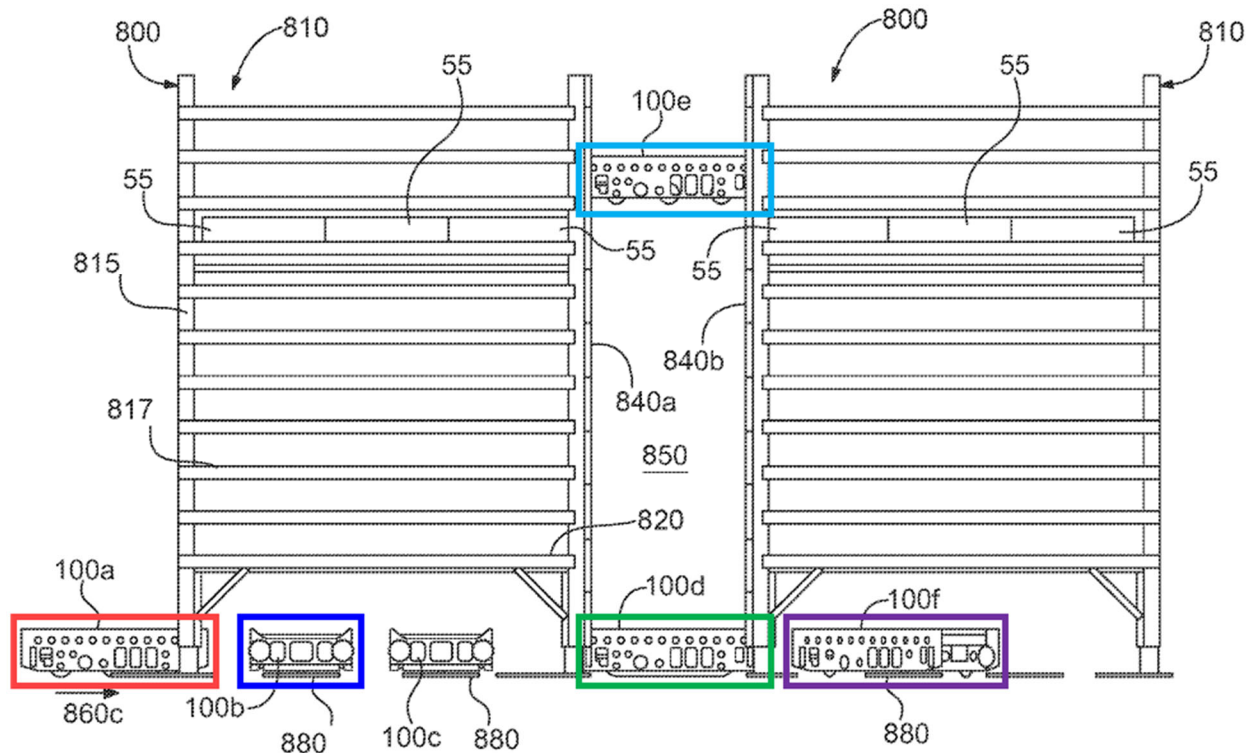


FIG. 7

EX1001, Figure 7.

As the '632 Patent explains:

[A] **first vehicle 100a** is oriented for horizontal movement along path 860c, transverse the length of aisle 850. A **second vehicle 100b** is oriented for horizontal movement under the rack along path 860b that is parallel to the length of the aisle 850. Additionally, **a third vehicle 100[d]** is positioned within the aisle 850 to climb vertical tracks along the racks 800 on either side of the aisle. A **fourth vehicle 100[e]** is also positioned within the aisle and has climbed up the track 840a,b to a storage location 820 in an upper portion of the column 810. Finally, a **fifth vehicle 100f** is positioned under the rack 800 and is oriented at an intermediate position between the orientation of **vehicle 100a** and the

orientation of **vehicle 100b**. In particular, the racks may be configured to facilitate the vehicles turning horizontally underneath the racks. The **fifth vehicle 100f** illustrates the vehicle in the process of turning under the rack from a first path to a second path.

EX1001, 17:7-25. EX2001, 46-48.

## **B. Prosecution History**

The '632 Patent was filed as US Patent Application No. 16/994,543 on August 14, 2020. EX1001, 1. On October 20, 2020, Applicant filed a Preliminary Amendment to remove multiple claim dependencies from various dependent claims. EX1002, 137-143. A Notice of Allowance was mailed on June 27, 2022 (EX1002, 76-77) and the '632 Patent was issued on October 18, 2022. A Certificate of Correction was issued on January 3, 2023, to make the corrections to claim 11 shown below. EX1001, 28.

### In Claim 11:

|         | <u>READS</u>                                                       | <u>SHOULD READ</u>                                                         |
|---------|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| Line 50 | "wherein the first horizontal path under the path is spaced apart" | --wherein the first horizontal path under the first rack is spaced apart-- |
| Line 50 | "from the first horizontal path a distance greater"                | --from the second horizontal path a distance greater--                     |

EX1002, 1.

### **III. CLAIM CONSTRUCTION**

The Board need only construe terms “that are in controversy, and only to the extent necessary to resolve the controversy.” *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Matal*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioners argue no terms need construction. Petition, 4. For the purposes of institution decision only, Patent Owner does not dispute Petitioner’s position. However, Patent Owner reserves the right to advance additional claim construction positions should the need arise.

### **IV. OVERVIEW OF THE REFERENCES**

Petitioners rely on the combination of U.S. Patent Publication No. 2017/0158430 (EX1005 or “Raizer”) and a Chinese Patent Publication Patent No. CN 109987366A (EX1006 or “Hangzhou”).

#### **A. Raizer**

Raizer is directed to “an automatic system for picking and placing boxes on shelves in a warehouse.” EX1005, ¶18. Raizer’s system includes:

- a. a set of autonomous mobile robots;
- b. a network of vertical and horizontal rails that are parallel to the vertical support posts and horizontal shelves of the shelving system in the warehouse; and

c. a Real Time Traffic Management (RTTM) server, which is a central processing server configured to communicate with the robots and other processors and servers in the warehouse.

EX1005, ¶¶19-21. EX2001, ¶¶51-52.

### 1. Raizer's Robots

Figure 5A, which is reproduced below, is a “schematic top perspective ... view[] of the robot 10 of the system of the [Raizer] invention.” EX1005, ¶103.

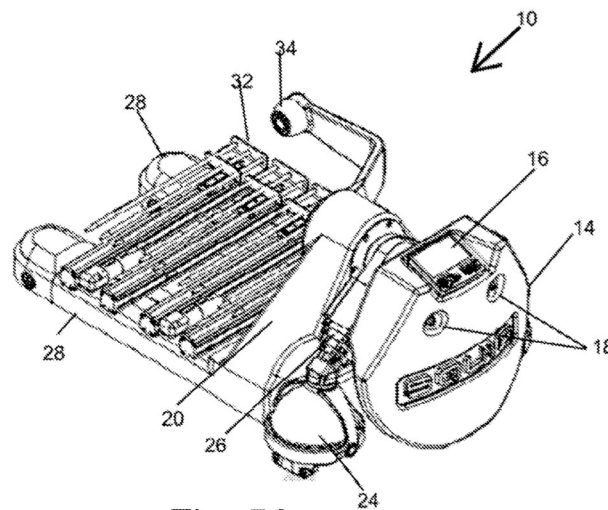


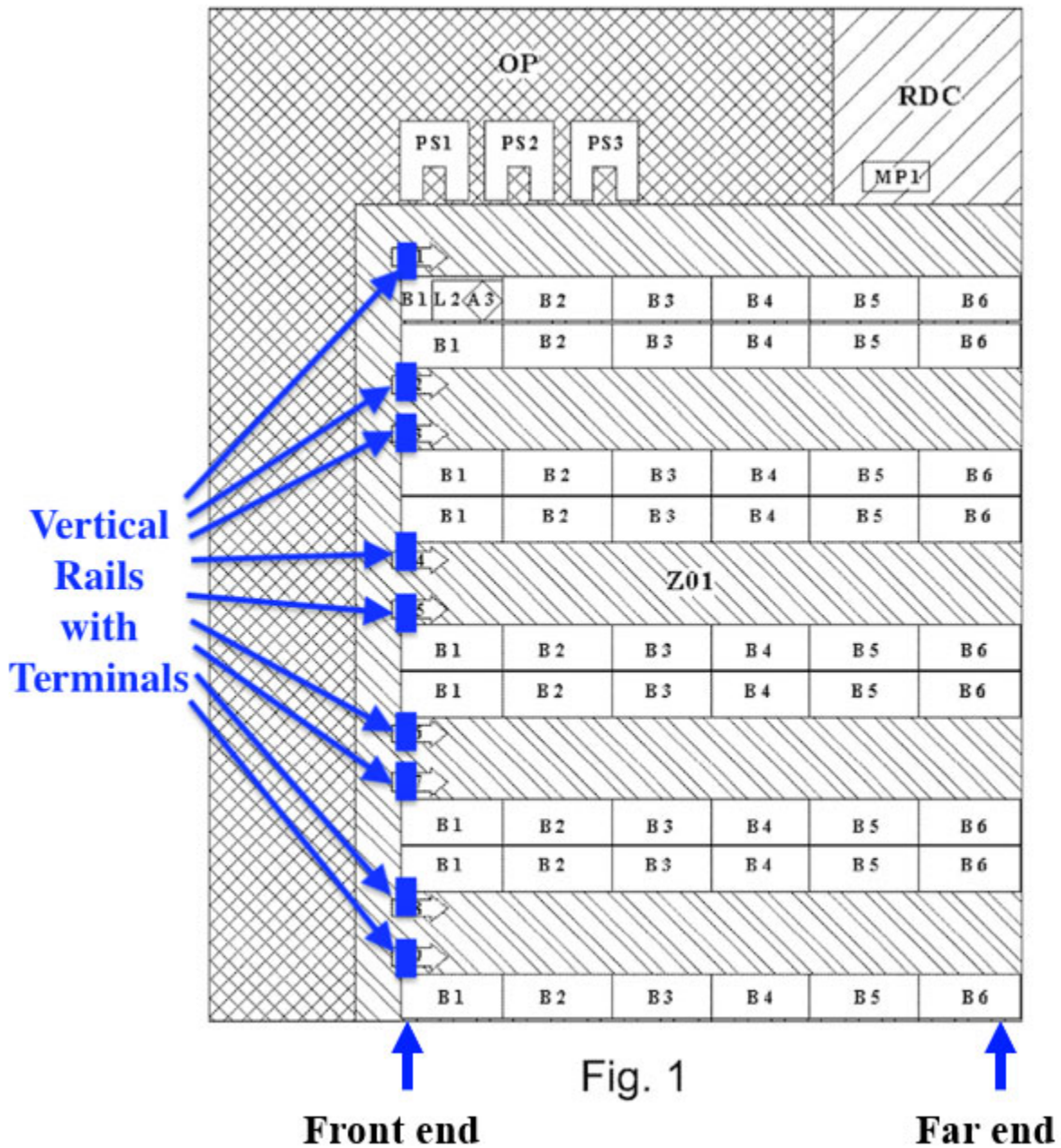
Fig. 5A

EX1005, Figure 5A. EX2001, ¶53.

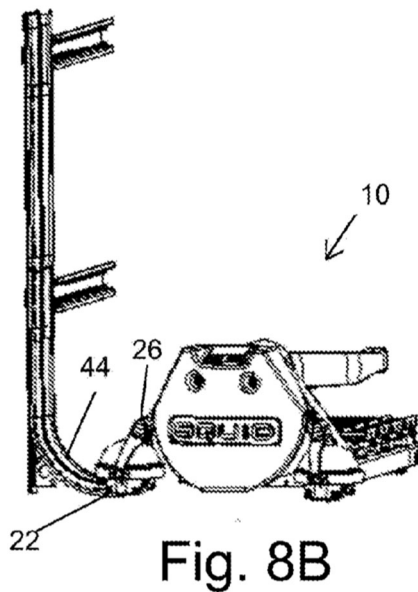
Raizer explains that the robots “have 3 dimensional movement capabilities. Utilizing at least one pair of motorized arms, the robots navigate both along the ground and up and along the shelves to the exact desired location.” EX1005, ¶78. EX2001, ¶54.

## **2. Raizer's Storage Structure**

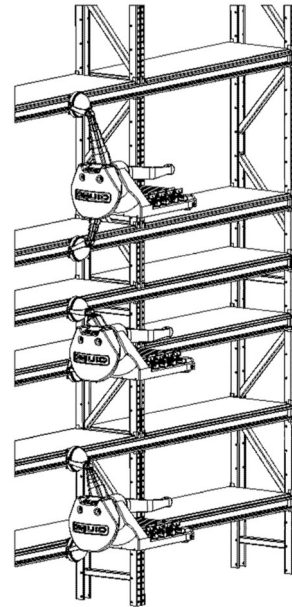
The floor plan of Raizer's storage system is schematically illustrated below in Figure 1. "The storage area comprises a plurality of shelving units consisting of a framework commonly made up of horizontal and vertical pieces of angle iron that support the shelves. The vertical supports divide the shelving unit into sections call [sic] bays (B1, B2, ...)." EX1005, ¶92. The front end and far end of the shelving units are annotated below. EX2001, ¶55.



EX1005, Figure 1. Figure 12A, reproduced below, shows the far end of Raizer's storage rack structure, along with one of the vertical supports that divide the shelving units.



EX1005, Figure 8B  
Front End of Storage Racks



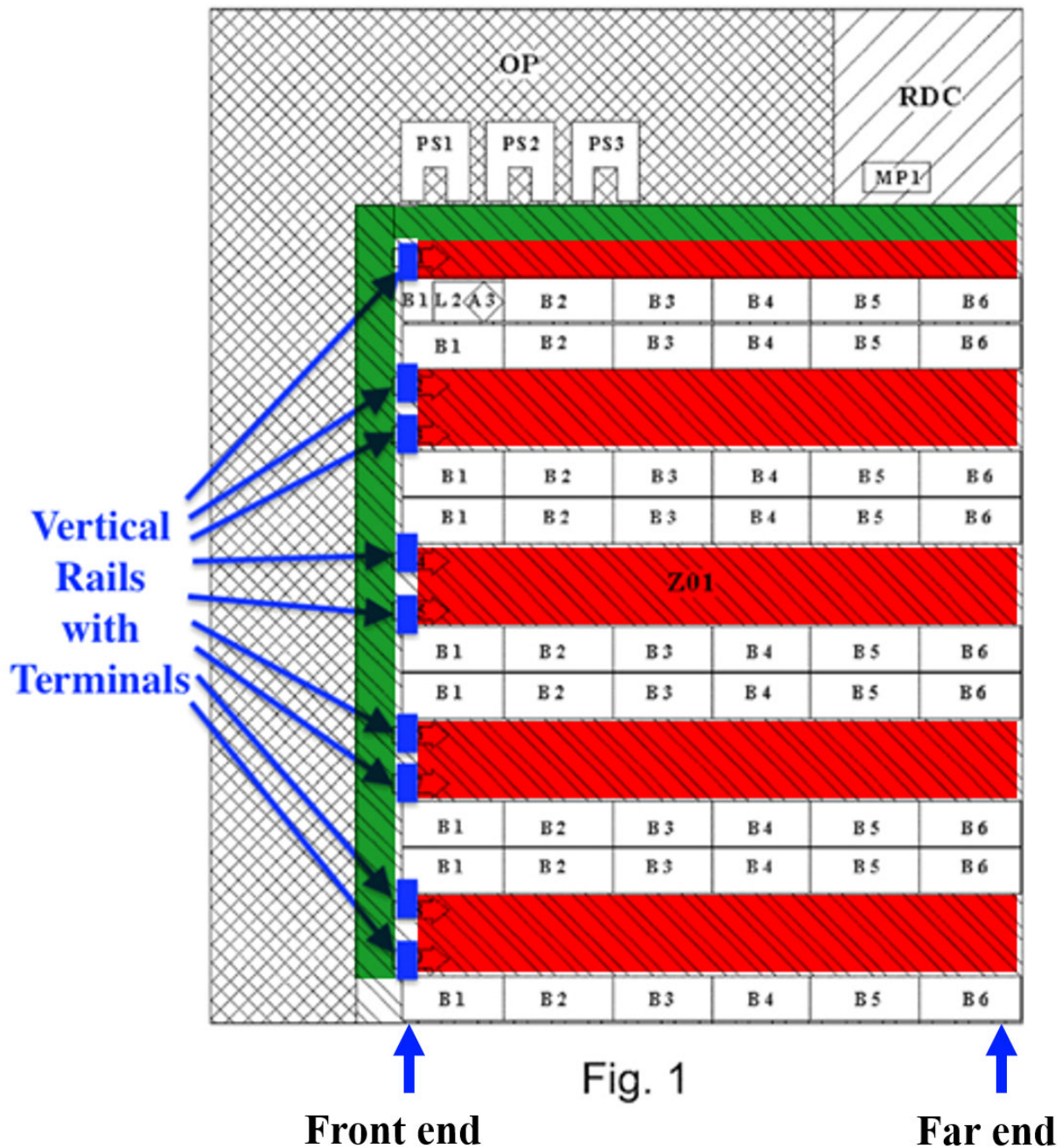
EX1005, Figure 12A  
Far End of Storage Racks

Figure 8B, reproduced above, shows the front end. As shown in Figure 8B, the front end has a curved ramp on the floor that allows the robot to attach and climb onto the vertical rail of rack. Raizer refers to this structure as “terminal 44.” EX1005, ¶111 (“A curved piece of rail called a terminal 44 is attached to the bottoms of the vertical rails where they reach the ground.”). And as Raizer explains, the vertical rail of the rack “is the only place where robots 10 can connect or disconnect from the rails 42 in order to climb to or descend from the shelves.” EX1005, ¶111; *see also, id.*, ¶85 (“The robots engage the rails **only** at a designated ‘terminal’ located on the floor and use these rails to maneuver vertically and horizontally.”). EX2001, ¶¶56-58.

### 3. Raizer's Navigation Control System

Raizer discloses a two-stage navigation control system; (1) along the ground and (2) up and along the shelves. EX1005, ¶78 (“Utilizing at least one pair of motorized arms, the robots navigate both [1] along the ground and [2] up and along the shelves to the exact desired location.”). In other words, the area in which Raizer's robots are travelling along the ground in Raizer's floor plan is limited to the **green** regions. The regions colored in **red** represent the second stage of Raizer's navigation control system in which the robots are travelling up off the ground but along vertical and horizontal direction on the shelves. EX2001, ¶¶59-60.

The first stage of Raizer's navigation along the ground uses what Raizer calls an “anchor point navigation.” “That is [the robots]use *less accurate sensing and motions when travelling on the floor* in order to arrive at the designated destination as rapidly and efficiently as possible...” EX1005, ¶80. EX2001, ¶61.



EX1005, Figure 1.

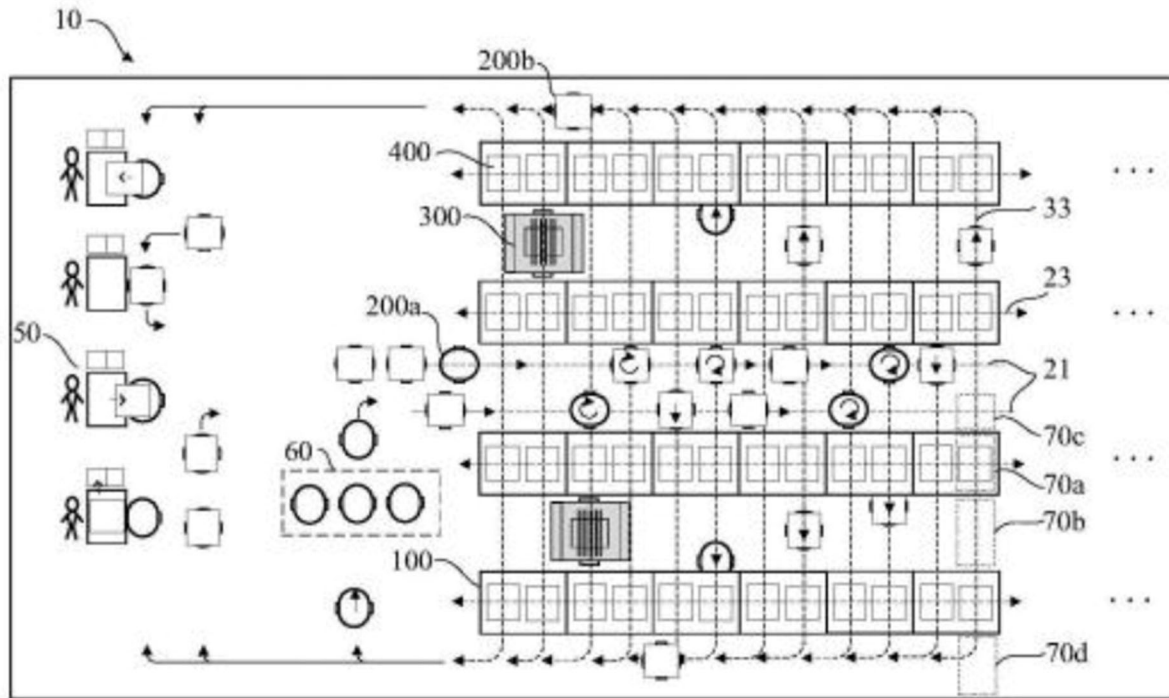
During the second stage, and as the robots prepare to travel up and along the shelves, the robots switch over to a more expensive, complex, and accurate navigation control system. See EX1005, ¶80 (“[Robots] employ dedicated

algorithms and more precise sensing only when near anchor points, i.e. fixed specific locations in the warehouse such as terminals (locations at which the robot leaves the floor and climbs a vertical rail of the shelving system), picking stations, and battery charging stations.”). “This feature provides significant savings in energy and load on the sensor and navigation system since the robot has to check exactly where it is only when approaching its destination.” EX1005, ¶80. EX2001, ¶¶62-63.

Indeed, Raizer discloses that this two-stage navigation system that employs its “**anchor point navigation**” is what distinguishes Raizer’s system from other existing systems. EX1005, ¶¶79-80 (“Some of the features of the invention that makes the system *unlike existing systems* are: The robots in the system of the invention use ‘*anchor point navigation*.’”). EX2001, ¶64.

## **B. Hangzhou**

In contrast to Raizer’s system in which the robots limit their movement on the ground to only certain regions of the floorplan, Hangzhou’s system allows its robots (that Hangzhou calls **trolleys**) to roam about the floor more freely. For example, Figure 10 in Hangzhou shows a complex array of various possible paths, including under the shelves, that its **trolleys** can take. EX2001, ¶¶65-66.



EX1006, Figure 10.

However, this increased degree of freedom in movement on the floor comes with a cost. Hangzhou's **trolleys** must be equipped with an extensive sensor network and complex navigation control systems in order for this navigation system to work properly without collisions. See EX1006, ¶59 ("Potential collisions may occur since the stacking device and auto-guided trolleys carrying standardized containers need to use the cache space below shelf rows. *In addition to running in a time-shared manner at the dispatch level, auto-guided trolleys 200 also run an obstacle avoidance algorithm to ensure safety and reliability.* Generally speaking, stacking vehicle path planning has a higher priority. Therefore, auto-guided trolley path

planning will be adjusted based on the information on stacking vehicle path planning.”). EX2001, ¶67.

Specifically, when Hangzhou’s **trolleys** are under the racks, complex sensor networks are in full effect to avoid obstacles. *See* EX1006, ¶59 (“[W]hen an auto-guided trolley carrying standardized containers drives along the row channel below a shelf row and is about to enter the next channel support frame ahead, ***the auto-guided trolley confirms the absence of obstacles***, such as other auto-guided trolleys or standardized containers, in the next channel support frame ***according to the information obtained via wireless communication and through its sensor system.***”). EX2001, ¶68.

In addition, unlike Raizer’s robots that can climb up the shelves, Hangzhou’s **trolleys** cannot leave the floor. Rather, Hangzhou utilizes two separate robot types that move in tandem with each other: (1) **trolleys** and (2) a **stacking vehicle**, as shown in annotated Figures 2 and 3 of Hangzhou below. In addition to the complex on-the-ground navigation algorithms associated with the **trolley**, Hangzhou’s system must additionally coordinate the motions of the two different robots so that they can work together to store and retrieve items from the storage shelves. EX2001, ¶¶69-70.

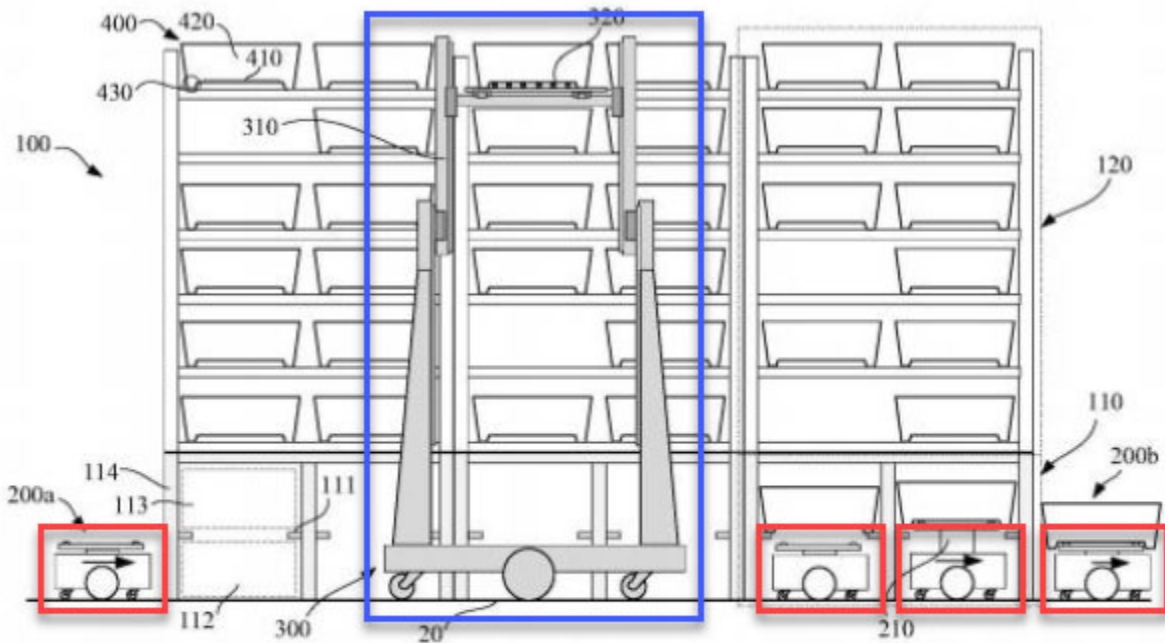


FIG. 2

EX1006, Figure 2.

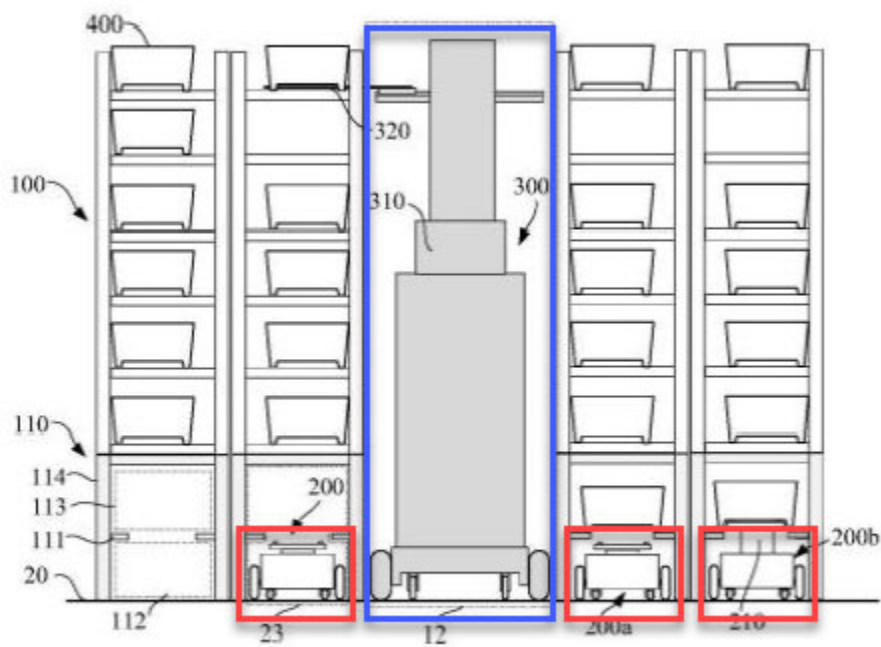


FIG. 3

EX1006, Figure 3.

For example, when the **trolleys** are under the shelves, they must transfer or receive items from the **stacking vehicle** which moves the items vertically up the storage racks. More specifically, as shown in Figure 3 below, Hangzhou's **trolleys** dock the containers they carry onto cache space 113, so that the **stacking vehicle** can lift it and place it on the shelves. EX1006, ¶46 (“A lifting platform 310 with a large lifting range is mounted above a stacking vehicle 300 and has a grabbing component 320 that can grab standardized containers 400 on different layers of a shelf 100.”). In a similar manner, **trolleys** can retrieve containers from cache space 113 after the containers have been placed in cache space 113 by **stacking vehicle**. EX1006, ¶46 (“At the lowest position of the lifting platform 310, grabbing components can place standardized containers 400 into cache spaces 113 on both sides.”). EX2001, ¶¶71-73.

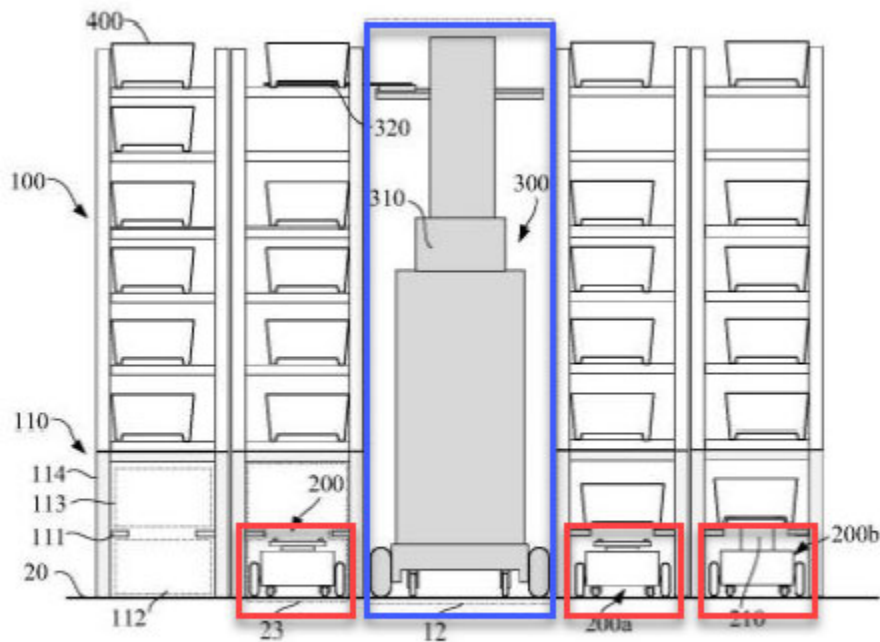


FIG. 3

EX1006, Figure 3.

In Hangzhou, **stacking vehicles** have priority over **trolleys**. EX1006, ¶59. (“Generally speaking, **stacking vehicle** path planning has a higher priority. Therefore, auto-guided **trolley** path planning will be adjusted based on the information on **stacking vehicle** path planning.”). Accordingly, during path planning, **trolleys** can end up waiting for a clear path before they reach a location to retrieve an item:

Obtain the information on the **stacking vehicles** and space occupancy on the route ahead from the dispatch control system *when an auto-guided **trolley 200** has reached the edge of a stacking row laneway 12 the trolley is about to enter*. Then conduct an analysis, continuing the calculation if the auto-guided trolley passage space 112 and the cache space 113 opposite to the stacking row laneway 12 allow the **trolley** to

enter to determine whether the time for passing through the stacking row laneway 12 is intersected with the time for **stacking vehicles 300** to running through this section of the row laneway. *Move forward if there is no intersection. Otherwise, run the algorithm above again after waiting for some time.*

EX1006, ¶63. What this translates to is the fact that the movement of the **trolleys** on the ground are often slowed down in order to avoid collisions and to effectuate proper delivery of items to the **stacking vehicle**. See EX1006, ¶63 (“Move forward if there is no intersection. Otherwise, run the algorithm above again after waiting for some time.”); EX1006, ¶55 (“If there is not any standardized container 400 to be outbound at the right end, the trolley 200 waits or continues to move forward to other shelves that needs to be outbound.”). EX2001, ¶¶74-76.

## V. THE '632 PATENT CLAIMS ARE PATENTABLE

Petitioners challenge the patentability of claims 1, 3-12, 14, and 23-27 of the '632 Patent, based on the combination of Raizer and Hangzhou.

Claims 1, 11, and 23 are independent. EX1001, 24:1-36, 26:15-52, 28:20-46.

Claims 3-10, 12, 14, and 24-27 depend directly from one or another of independent claims 1, 11, and 23. *Id.*, 25:47-26:14, 26:53-58, 27:3-6, 28:47-60.

**A. Petitioners’ Proposed Modification Is Contrary To Raizer’s  
Purported Inventiveness, Changes Its Primary Principle Of  
Operation And Renders Raizer Unsatisfactory For Its Intended  
Purpose**

For each of the challenged claims, Petitioners propose combining the teachings of Raizer with Hangzhou. Specifically, Petitioners argue that “[a] POSITA would have understood that combining the Raizer autonomous robots, which move both horizontally and vertically, with Hangzhou’s teaching of running such robots in passage spaces beneath the shelves, would achieve maximum flexibility in maneuvering the robots along the warehouse floor and eliminating bottlenecks.” Petition, 7.

However, as discussed in Section IV, Raizer and Hangzhou describe two fundamentally different systems. Specifically, Raizer’s robots use “anchor point navigation,” which allows Raizer’s robots to “use *less accurate sensing and motions when travelling on the floor* in order to arrive at the designated destination *as rapidly and efficiently as possible* and employ dedicated algorithms and more precise sensing only when near anchor points, i.e. fixed specific locations in the warehouse such as terminals (locations at which the robot leaves the floor and climbs a vertical rail of the shelving system), picking stations, and battery charging stations.” EX1005, ¶80. EX2001, ¶84.

Raizer's use of "anchor point navigation" is an essential feature of Raizer's system, evidenced by the fact that Raizer noted that it is the "anchor point navigation" that distinguishes Raizer's system from other existing systems. EX1005, ¶¶79-80 ("Some of the features of the invention *that makes the system unlike existing systems* are: The robots in the system of the invention use "anchor point navigation"). Moreover, Raizer explains that "anchor point navigation" is beneficial, because "[t]his feature provides *significant savings in energy and load on the sensor and navigation system* since the robot has to check exactly where it is only when approaching its destination." EX1005, ¶80. EX2001, ¶¶85-86.

On the other hand, Hangzhou requires a much more complex navigation planning system in order to ensure safe and reliable operation. EX1006, ¶59 ("*In addition to running in a time-shared manner at the dispatch level, auto-guided trolleys 200 also run an obstacle avoidance algorithm to ensure safety and reliability.*"); *id.*, ("[T]he auto-guided trolley confirms the absence of obstacles, such as other auto-guided trolleys or standardized containers, in the next channel support frame *according to the information obtained via wireless communication and through its sensor system.*"). For example, Hangzhou's navigation system needs to evaluate four different path planning methods:

There are four main path planning methods: a **first** path planning method is that a trolley travels in a row channel 23, a movable bracket it carries is first unloaded before removing the movable bracket in front;

a **second** path planning method is that a trolley carrying a movable bracket enters a stacking row laneway 12 along which the trolley travels to finally enter a column laneway 32, which requires the coordination with stacking vehicle path planning to avoid collision with stacking vehicles; a **third** path planning method is that a trolley carrying a movable bracket enters a position below another shelf after running through a stacking row laneway 12; and a **fourth** path planning method is that a trolley-special row laneway 21 or a general row laneway 22 next to a shelf is utilized. The fourth planning method has the shortest route, but the involved row laneway needs to be reserved, causing a reduction in the available storage area of a warehouse.

EX1006, ¶80. EX2001, ¶¶87-88.

As a result, Hangzhou's planning algorithm intentionally introduces delays and wait times when the **trolleys** are travelling on the ground to plan a path to a destination that avoids collisions and proper transfer of items between the **trolleys** and the **stacking vehicle**:

Below is a basic planning algorithm. Obtain the information on the stacking vehicles and space occupancy on the route ahead from the dispatch control system when an auto-guided trolley 200 has reached the edge of a stacking row laneway 12 the trolley is about to enter. **Then conduct an analysis**, continuing the calculation if the auto-guided trolley passage space 112 and the cache space 113 opposite to the stacking row laneway 12 allow the trolley to enter to determine whether the time for passing through the stacking row laneway 12 is intersected

with the time for stacking vehicles 300 to running through this section of the row laneway. Move forward if there is no intersection. Otherwise, **run the algorithm above again after waiting for some time...**

EX1006, ¶63. EX2001, ¶¶89-91.

In other words, introducing all of the required sensors and navigational system complexity required by Hangzhou to ensure safe and reliable operation would mean it would have altered what Raizer considers to be the distinguishing features of Raizer's purported invention: "us[ing] *less accurate sensing and motions when travelling on the floor* in order *to arrive at the designated destination as rapidly and efficiently as possible.*" EX1005, ¶80. EX2001, ¶92.

In addition to having changed the purported goal of Raizer's robots to move about the floor quickly with less accurate sensing and rendering Raizer unsatisfactory for its intended purpose, a POSITA would have been dissuaded from making the proposed modification for two additional reasons, when considering the vertical movement of the robots up and along the shelves. EX2001, ¶93.

**First**, Petitioners propose "elevat[ing] the lower shelves to allow robots loaded with containers to travel underneath." Petition, 7. But allowing the same storage capacity of Raizer's storage rack using elevated lower shelves, would have required elevating the other shelves of the rack by a commensurate amount. In some cases, this would not have been possible. For example, if the warehouse ceiling

height was fixed, it would not have allowed further elevating the top shelves, leading to a decrease in warehouse storage capacity. EX2001, ¶94.

**Second**, even if elevating the shelves were possible, the proposed modification would have resulted in increased energy consumption each time a robot has to travel up the shelves to deliver/retrieve an item. Not only would the robot have to travel additional distances, it would have been further burdened with additional sensor systems not desired in Raizer in order to allow the robots to roam about more freely on the floor, as Hangzhou teaches. In other words, Petitioners' proposed modification would have rendered Raizer unsatisfactory for its intended purpose that allowed it to distinguish itself from existing systems. And a POSITA would not have been motivated to modify Raizer to destroy its purportedly inventive aspect, only to have it revert back to existing systems that do not use "anchor point navigation." EX2001, ¶¶95-97.

Indeed, the PTAB has denied institution of a Petition where Petitioners proposed a combination that was inconsistent with the primary reference's stated objectives. *See ASUSTeK Computer, Inc. et al v. LiTL LLC*, IPR2024-00532, Paper 20 at 21, 23 (denying institution by finding that "Petitioner's modified computer incapable of fulfilling Lane's objectives" and that "the proposed modification would render Lane's computer unsuitable for its intended purpose."); *see also Shimano, Inc. v. Globberide, Inc.*, IPR2015-00273 Paper 40, 12 (Final Written Decision)

(PTAB Jun 16, 2016) (citing *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) as standing for the proposition that a case of obviousness is undermined if modifying the prior art would render that prior art inoperable for its intended purpose); *see also Trivasular, Inc. v. Samuels*, 812 F.3d 1056, 1068 (Fed. Cir. 2016) (affirming the Board’s finding that a POSA would not have had motivation to replace barbs in a primary reference with gripping protuberances from a secondary reference because the modification “would ***destroy the basic objective*** of the barbs, which is to penetrate surrounding tissue”); *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984) (reversing the Board’s determination of obviousness where the modification to the primary reference that turned it upside down as needed to meet the claim would have ***rendered the primary reference “inoperable for its intended purpose”***); *Plas-Pak Industries, Inc., v. Sulzer Mixpac AG*, 600 F.App’x 755, 758 (Fed. Cir. 2015) (affirming Board’s finding of obviousness where proposed alteration to prior art would not achieve “backflow prevention” comparable to that disclosed in a prior art reference where that reference was “rife with statements defining ‘the invention’ as adding stop valves to prevent backflow,” explaining that “[s]uch a change in a reference’s ‘principle of operation’ is unlikely to motivate a person of ordinary skill to pursue a combination with that reference”).

Indeed, in determining whether the POSITA would have been motivated to make the change proposed by Petitioners, the drawbacks of making the modification

to Raizer outweigh the alleged benefit. This is particularly true where Petitioners' proposed modification would have resulted in a robot much like the prior art robots that Raizer criticized. *See Medtronic, Inc. v. Teleflex Innovations SA RL*, 69 F.4th 1341, 1349–50 (Fed. Cir. 2023) (explaining that it would have been an “error for the Board to ignore evidence that a proposed modification would interfere with a reference’s stated purpose” and affirming Board finding that challenged patent was non-obvious in part because “the destruction of [a prior art reference’s] ‘entire premise’ ‘counsel[ed] strongly against’ obviousness.”)

For at least these reasons, institution should be denied.

**B. Claims 1 And 11: Proposed Modification Would (1) Not Allow Raizer’s Robots To “Driv[e] The First Vehicle Along A First Path Under A First One Of The Racks ... Wherein The First Path Extends In A Direction Parallel To The First Aisle And Spaced Apart From The First Aisle,” Nor Provide (2) “A First Horizontal Path That Extends Under The First Rack In A Direction Parallel To The Aisle” Or (3) “A Second Horizontal Path That Extends Under The First Rack In A Direction Parallel To The Aisle”**

There are additional reasons why institution should be denied, particularly for claims 1, 3-10, 11, 12, and 14. Independent claims 1 and 11 require “driving the first vehicle along a first path under a first one of the racks ... wherein the first path extends in a direction parallel to the first aisle and spaced apart from the first aisle,” and “a first horizontal path that extends under the first rack in a direction parallel to

the aisle,” and “a second horizontal path that extends under the first rack in a direction parallel to the aisle,” Petitioner admits that Raizer does not teach or suggest this limitation. Petition, 20-21, 60-61. As such, Petitioner proposes modifying Raizer with Hangzhou to meet this limitation. *Id.* EX2001, ¶98.

However, Petitioner’s only proposed modification is to modify Raizer’s storage racks by “installing shelving units with elevated lower shelves to allow robots loaded with containers to travel underneath.” Petition, 7. Even assuming—solely for the sake of argument—that a POSITA would have been motivated to raise Raizer’s shelving units, such a modification still would not have allowed Raizer’s robots to “drive the first vehicle along a first path under a first one of the racks ... wherein the first path extends in a direction parallel to the first aisle and spaced apart from the first aisle,” and would not allow Raizer’s storage system to form “a first horizontal path that extends under the first rack in a direction parallel to the aisle” and “a second horizontal path that extends under the first rack in a direction parallel to the aisle.” EX1001, 25:18-22, 26:39-42. EX2001, ¶99.

As shown in Figures 1 and 12A below, the vertical supports (circled below in red) that divide the shelving units would prevent Raizer’s robot from moving along the direction of the arrows, as required by claim 1 and would not allow forming a first and second horizontal paths from that extend under the first rack in a direction parallel to the aisle as required by claim 11. EX2001, ¶100.

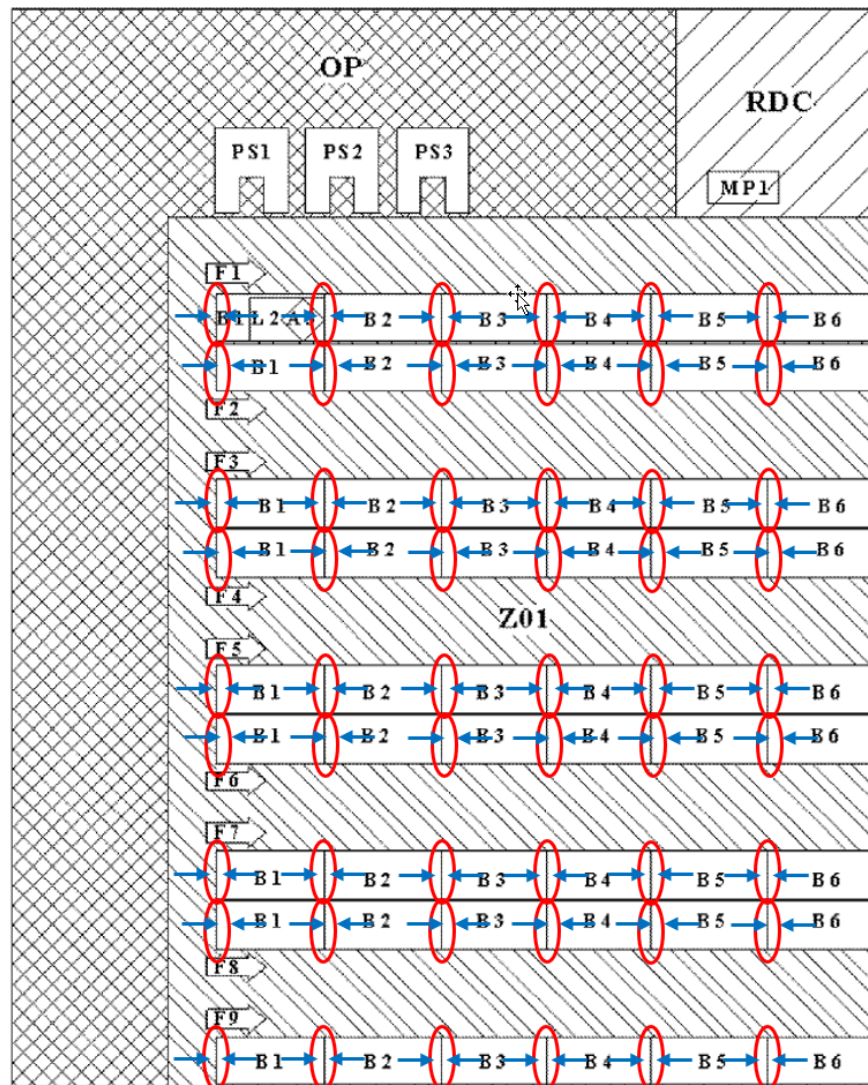


Fig. 1

EX1005, Figure 1.

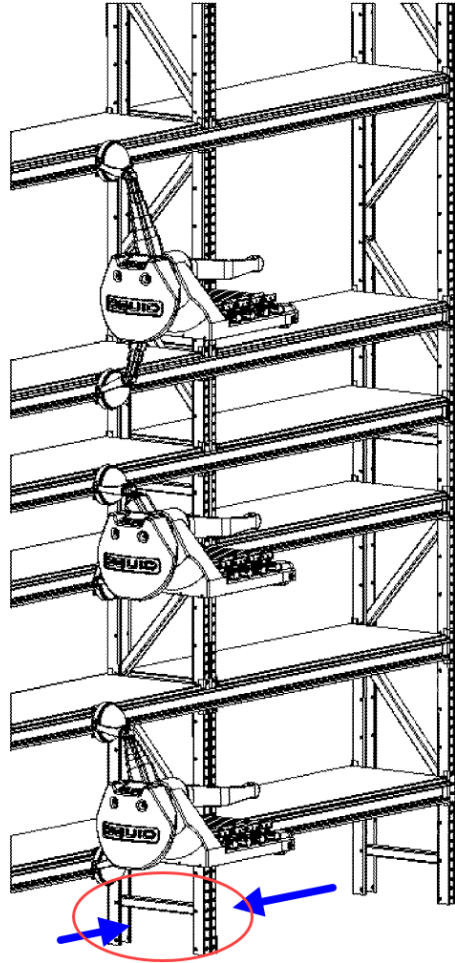


Fig. 12A

EX1005, Figure 12A.

The Petition is simply devoid of any details as to how Raizer's system would have been modified to achieve the claimed "driving the first vehicle along a first path under a first one of the racks ... wherein the first path extends in a direction parallel to the first aisle and spaced apart from the first aisle," and "a first horizontal path that extends under the first rack in a direction parallel to the aisle," and "a second horizontal path that extends under the first rack in a direction parallel to the

aisle.” *See* Petition, 20-23, 60-61. “While the Board should not take an overly mechanistic view of a petition and decline to address an argument because the petitioner did not present it with ideal vigor and clarity, the Board should also not have to decode a petition to locate additional arguments beyond the ones clearly made.” *Netflix, Inc. v. DivX, LLC*, 84 F.4th 1371, 1377 (Fed. Cir. 2023); *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (“[W]e find no support for the PTO’s position that the Board is free to adopt arguments on behalf of petitioners that could have been, but were not, raised by the petitioner during an IPR. Instead, the Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.”); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge, Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016) (“It is of the utmost importance that petitioners in the IPR proceedings adhere to the requirement that the initial petition identify ‘with particularity’ the ‘evidence that supports the grounds for the challenge to each claim.’”) (citing to 35 U.S.C. § 312(a)(3)). EX2001, ¶¶101-102.

Indeed, even if the vertical supports were removed in the proposed modification (*which Petitioners have not even attempted to argue*), such removal would have not been possible as it can cause significant complications. For example, removal of the vertical supports may cause warpage or buckling of the shelving units. And because the horizontal rails that these robots travel along the shelving

units are tied to the shelving units themselves, such warpage would have negatively impacted the movement of the robots. EX2001, ¶¶101-102.

As a final note, Petitioner’s expert declaration repeats the same conclusory statements proffered in the Petition and should be given little to no weight. “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.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016); *see also, Xerox Corp. v. Bytemark, Inc.*, IPR202200624, Paper 12 at 5 (PTAB Feb. 10, 2023) (Director Review) (precedential) (determining that “the Board was correct in giving little weight to Petitioner’s expert because the expert declaration merely offered conclusory assertion without underlying factual support and repeated, verbatim, Petitioner’s conclusory arguments”); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (“In an [inter partes review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.”) (citing 35 U.S.C. § 312(a)(3)).

Accordingly, Petitioners have failed to demonstrate a reasonable likelihood that they will prevail with respect to independent claims 1 and 11 and dependent claims 3-10, 12 and 14. EX2001, ¶103.

**VI. DISCRETIONARY DENIAL UNDER 35 U.S.C. § 314(A)**

To be clear, Petitioner has not met its burden to demonstrate how any of the challenged claims 1, 3-12, 14, and 23-27 are unpatentable based on the combination of Raizer and Hangzhou. *See* Section V.A (explaining that a POSITA would not have been motivated to combine Raizer with Hangzhou as proposed by the Petitioners, because the proposed modification would have destroyed Raizer’s principle of operation and its intended purpose). However, to the extent the Board only accepts the arguments articulated in Section 0 (applicable to claims 1, 3-10, 11, 12, and 14), the Board may nevertheless discretionarily deny institution. *See SAS Inst. V. Iancu*, 138 S. Ct. 1348, 1356 (2018); *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“First of all, the PTO is permitted, but never compelled, to institute an IPR proceeding.”).

As the Trial Practice Guide specifies, under appropriate circumstances, the Board may exercise their discretion to deny a petition “even when the petition includes at least one claim subject to a challenge that otherwise meets the criteria for institution.” Consolidated Trial Practice Guide, 64; *see also* 84 Fed. Reg. 64,280 (Nov. 21, 2019). For example:

[A] panel [that] determines that a petition meets the standards for institution in relation to fewer than all the challenges presented . . . will evaluate all the challenges and determine whether, in the interests of

efficient administration of the Office and integrity of the patent system,  
the entire petition should be denied.

*Id.* (citing 37 C.F.R. §§ 316(b), 326(b)).

Specifically, even if the Board determined that challenged claims 23-27 satisfied the standard for institution, instituting a trial on all claims would not be an efficient use of the Board's resources. For example, in *Chevron*, the panel ultimately exercised discretion to deny institution where "Petitioner demonstrate[d], at most, a reasonable likelihood of prevailing with respect to two dependent claims out of a total of twenty challenged claims." *See Chevron Oronite Co. LLC v. Infineum USA L.P.*, IPR2018-00923, Paper 9 (DI), 12 (PTAB Nov. 7, 2018). Similarly, in *Lumenis*, the Board exercised its discretion to deny institution when the Petitioner could at best demonstrate a reasonable likelihood of success in only two of twenty-one challenged claims. *See Lumenis Be Ltd. et al v. BTL Healthcare Technologies AS*, IPR2021-01275, DI at 10 (PTAB Feb. 08, 2022). In *Deeper*, the panel exercised discretion to deny institution where Petitioner demonstrated a reasonable likelihood of prevailing with respect to only two out of twenty-three challenged claims. *Deeper, UAB v. Vexilar, Inc.*, IPR2018-01310, Paper 7 (DI), 43 (PTAB Jan. 24, 2019). More recently, in *Nanya Technology Corporation et al v. Monterey Research, LLC*, IPR2021-00171, DI (PTAB May. 26, 2021), the Board exercised their discretion to deny institution when the Petitioner could at best demonstrate a

reasonable likelihood of success in only eight of twenty challenged claims. *See Id.*,

22. Here, to the extent the Board only accepts the arguments articulated in Section 0 (applicable to claims 1, 3-10, 11, 12, and 14) and reject the arguments articulated in Section V.A (applicable to all challenged claims), Petitioner would only be able to demonstrate a reasonable likelihood of prevailing with respect to only five out of seventeen challenged claims. Accordingly, even if the Board only accepts the arguments articulated in Section 0 (applicable to claims 1, 3-10, 11, 12, and 14), the Board should exercise their discretion under 35 U.S.C. § 314(a) to deny *inter partes* review of all challenged claims.

## VII. CONCLUSION

For the reasons set forth above, the Board should not institute *inter partes* review.

Dated: August 13, 2024

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Case IPR2024-00850  
U.S. Patent No. 11,472,632

**CERTIFICATION UNDER 37 C.F.R. § 42.24(d)**

I hereby certify that this Patent Owner's Preliminary Response, excluding the portions exempted under 37 C.F.R. § 42.24(a), has 5,648 words as counted by the word-processing system used to prepare this document, in compliance with 37 C.F.R. §42.24(d).

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**CERTIFICATE OF SERVICE**

Pursuant to 37 C.F.R. § 42.6(e), the undersigned certifies that a complete copy of the following materials:

- Patent Owner's Preliminary Response;
- Exhibit List;
- Exhibit 2001;
- Certification Under 37 C.F.R. § 42.24(d)

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