

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

Opex Corporation,
Patent Owner

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

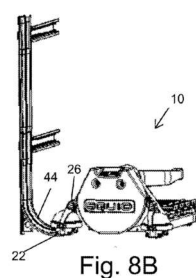
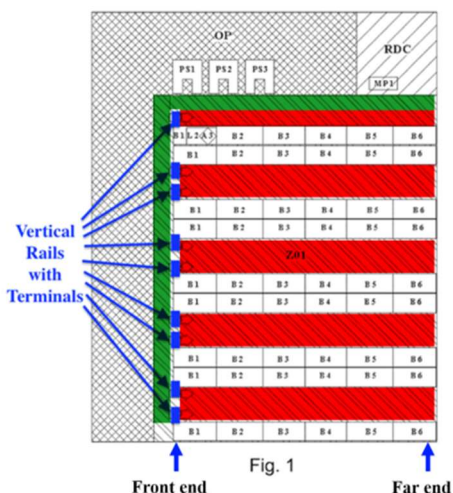
**PETITIONERS' REPLY TO THE PATENT OWNER'S PRELIMINARY
RESPONSE TO THE PETITION**

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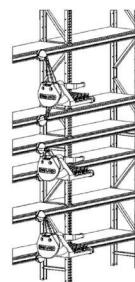
The Petition relies on a combination of *Raizer* and *Hangzhou*. Paper 4, 1. *Raizer* discloses autonomous robots configured to travel along a warehouse floor and along “a network of vertical and horizontal rails” that may be attached to most any type of shelving structure and at any location within the structure. Paper 4, 5-6, 20; *see also* Ex. 1005, ¶¶[0015-17, 0079-91, 0098]. *Raizer*’s vertical travel flexibility allows for increases in available storage space as shelving units grow taller to take advantage of the full height of a warehouse. Paper 4, 6-7. Taller shelving units means more autonomous robots, creating a need for additional travel paths to avoid collisions and to reduce congestion. *Id.* *Hangzhou* teaches running autonomous robots in passage spaces beneath the shelves to provide such additional travel paths. *Id.* Combining *Raizer* and *Hangzhou* to obtain additional travel paths would have led to a reduction in congestion and prevention of traffic jams. Paper 4, 8.

The POPR erroneously alleges, using the self-annotated version of Fig. 1 reproduced below, that “the area in which *Raizer*’s robots are travelling along the ground...is limited to the **green** areas,” the **blue** boxes represent the *only* locations where the robots can enter the vertical rails, and “[t]he regions colored in **red** represent” where “the robots are travelling *up off the ground*¹ but along vertical and horizontal direction on the shelves.” Paper 8, 11-13. The **blue** box terminal locations and artificially restricted **red/green** travel path split are simply fabricated.

¹ All emphasis is added herein unless otherwise stated.



EX1005, RAIZER Figure 8B
Front End of Storage Racks



EX1005, RAIZER Figure 12A
Far End of Storage Racks

Paper 8, 14 (Figs. 1, 8B, and 12A as annotated by PO).

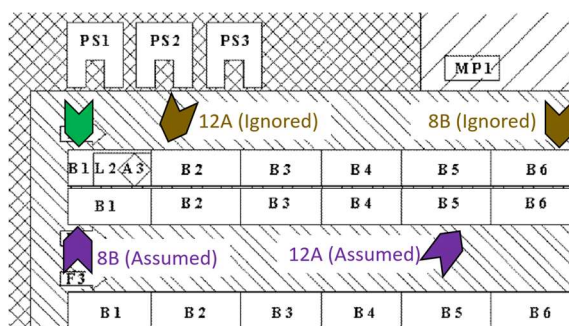
The Board authorized briefing on the POPR arguments concerning *Raizer* and its annotated Fig. 1 including (1) the alleged limited vertical rail with terminal positioning (**blue** boxes), and (2) the alleged limited robot travel paths (**green** and **red** areas). *Raizer* supports neither of these limitations.

I. *Raizer's* Terminals Are Not Limited To The “Blue Box” Positions

To arrive at its mischaracterization of Fig. 1, the POPR characterizes Fig. 8B as depicting a “front end” of the *Raizer* storage racks (presumably because horizontal rails are depicted as extending from only one side of the shown vertical rail), and Fig. 12A as depicting a “far end” of the *Raizer* storage racks (presumably because terminals are not shown). Paper 8, 12. But there is no teaching or suggestion within *Raizer* that (1) Fig. 8B illustrates the “front end” of any storage rack, (2) *Raizer's* terminals 44 are limited to positioning at an end of a storage rack, nor that (3) Fig. 12A illustrates the “far end” of any storage rack. Instead, these figures embody mere

examples of one configuration of *Raizer*. *Raizer* explains that “a terminal 44 is attached to the bottom of the vertical rails where they reach the ground,” and refers to a “terminal” as “the only place where robots 10 can connect or disconnect from the rails 42 in order to climb or to descend from the shelves.” Ex. 1005, ¶[0111]. *Raizer does not limit* which vertical rail a terminal may be attached and *never* confines terminal locations to “front end” positions of the storage racks. Ex. 1005, ¶¶[0080, 0085, 0111]; Paper 4, 30, 57, 71; *see also* Ex. 1005, ¶¶[0124-0130], Figs. 11A-11D (depicting upward robot travel along a vertical rail to a *two-way* horizontal rail junction from a more centrally-located terminal position along the shelf).

Even though neither figure is presented to limit terminal positioning or robot travel, to arrive at its conclusions, the POPR appears to assume unsupported viewer positions for Figs. 8B and 12A, highlighted in annotated and excerpted Fig. 1 below with **purple** arrows as **8B (Assumed)** and **12A (Assumed)**.



Ex. 1005, Fig. 1 (excerpt) (annotated).

Raizer simply does not support limiting the viewer perspectives illustrated by Figs. 8B and 12A to **8B (Assumed)** and **12A (Assumed)**. Indeed, the viewer

perspectives illustrated by Figs. 8B and 12A are equally consistent with respective viewer positions identified in annotated Fig. 1 with **gold** arrows as **8B (Ignored)** and **12A (Ignored)** – these viewer positions demonstrate that the terminals can be located on vertical rails other than the POPR’s artificially restricted terminal locations and still represent the views of Figs. 8B and 12A. The **purple/gold** viewer position illustrations are equally applicable to the remaining storage racks (not shown).

Moreover, the POPR’s (improper) assumption that Fig. 8B taught locating a terminal at the front end of a rack contradicts the POPR’s assertion that Fig. 8B teaches a terminal location at the top “front end” of a storage rack (*see* annotated Fig. 1 above with a **green arrow**). The horizontal rails depicted in Fig. 8B extend rightward (rather than leftward) relative to the vertical rail thereby precluding positioning at the **green arrow** and suggesting positioning at **8B (Ignored)** instead. Such positioning would require robots moving along the floor within the **red** areas – *contradicting* the POPR’s allegation that robots are *restricted from* the **red** areas.

II. *Raizer’s* Robot Travel Paths Are Not Limited To Green/Red Areas

Raizer does not teach or suggest that its robots are limited to traveling along the ground in the **green** areas and traveling along the shelves in the **red** areas, as alleged in the POPR. This unsupported view of *Raizer’s* travel paths naturally flows from the unfounded assertion that the **blue** locations are the only locations where the robots can enter the vertical rails.

Such travel path limitations also contradict *Raizer*'s emphasis on modularity, flexibility, and travel freedom. *Raizer* specifically touts "autonomous mobile robots" with "***multi-channel degrees of freedom and to use the flexibility of the system's design,***" and "three-dimensional navigation and travel capabilities that enable them to navigate and travel autonomously ***both along the floor and up the vertical rails and along the horizontal rails of the network rails.***" Ex. 1005, ¶¶[0022], [0089]; Ex. 1003, ¶75, Paper 4, 5, 19-20. *Raizer* states that the robot "can be steered by its control system ***to any location on the floor of the warehouse...***", which necessarily includes the purported "restricted" red areas. Ex. 1005, ¶[0104]; Ex. 1003, ¶86; Paper 4, 5. *Raizer* explains that the "modular architecture of the system allows integrating with an already in-use facility with a high level of implementation flexibility and ongoing scalability." Ex. 1005, ¶[0023]; Ex. 1003, ¶81; Paper 4, 5.

Even if the *Raizer* terminals were limited to a particular location, which they are not, *Raizer* does not teach or suggest that its robots never travel in the aisles. Regardless, the combination of *Raizer* and *Hangzhou* undoubtably provides additional travel paths (other than the **green** pathways) to reduce congestion and traffic jams, which addresses the alleged shortcoming in the POPR. Paper 4, 8.

Respectfully submitted,

Date: September 13, 2024

By: / John D. Haynes /
John D. Haynes

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e), 42.105, the undersigned hereby certifies that true and correct copies of the above-captioned **PETITIONERS' REPLY TO THE PATENT OWNER'S PRELIMINARY RESPONSE TO THE PETITION** were served via electronic mail to the following attorneys of record for Patent Owner:

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