

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAZOOKA-FARMSTAR, LLC

Petitioner,

- vs. -

NUHN INDUSTRIES LTD.,

Patent Owner.

Case No: IPR2024-00004

U.S. Patent No. 11,491,835

PETITIONER'S SUR-REPLY IN OPPOSITION TO THE REVISED MOTION
TO AMEND
INTER PARTES REVIEW OF U.S. PATENT NO. 11,491,835

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I. INTRODUCTION

Nuhn argues in its Reply against the sufficiency of the prior art, while simultaneously ignoring the lack of support for its own proposed claim amendments. Nuhn appears to reverse the standards for obviousness and written description. While an obviousness analysis may properly take into account the understanding of a POSA to bridge the gaps in the prior art's explicit teachings, "a description that merely renders the invention obvious does not satisfy the [written description] requirement[.]" *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1352 (Fed. Cir. 2010); *see KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 420-21 (2007).

Nowhere does the '835 Patent show or describe a pump housing "mounted to the underside of the vehicle," or a submerged component being "directly rearward" and at the same vertical height as the pump housing. Nor are these features inherent from the '835 Patent disclosure. The prior art taught how to "recirculate manure to the middle of large lagoons" along with the remaining features of the '835 Patent's generic disclosure. If the features that Nuhn now seeks to claim were as important as Nuhn now represents, Nuhn should have disclosed them in its patent application. It did not. Nuhn's proposed amendments are obvious over the prior art and fail for lack of written description support.

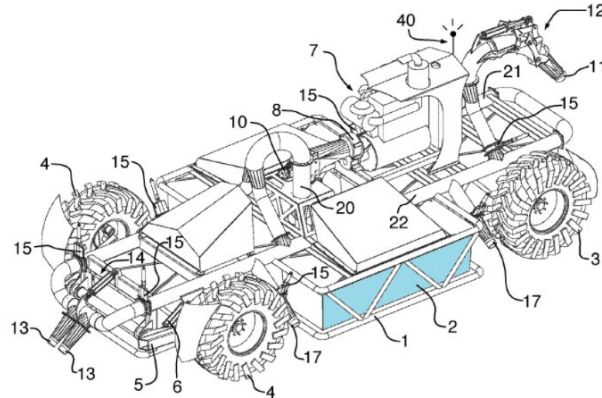
II. CLAIM CONSTRUCTION

A. “Along The Longitudinal Centerline”

“Along the longitudinal centerline” should be interpreted as “on or next to the longitudinal centerline.” Merriam-Webster defines “along” as “in a line matching the length or direction of.” EX1175, 1. Based on this definition, a POSA would have understood that the term “along” permits positionality “in a line matching the length or direction” of the longitudinal centerline (i.e. a line on or next to the longitudinal centerline). EX1174, ¶13. The meaning of “along” is further evidenced from the exemplary phrase “walking along the river.” POSAs would have understood this phrase to refer to one walking “next to” the river—not necessarily in it. Similarly, the alternate definition cited by Nuhn provides the example usage: “a house along the river[.]” EX1175, 1. POSAs would have understood that this definition does not require that the house be positioned *in the river*, rather, the definition of this term is broad enough to encompass positionality “next to.” EX1174, ¶13.

Furthermore, Nuhn’s expert’s understanding of the term “along” demonstrates that the meaning of this term should encompass structure positioned “next to.” Specifically, during his deposition, Mr. Prairie agreed that portions of the side of the ’835 Patent buoyant element (blue, below) could be understood as “along the underside of the floatable vehicle body[.]” EX1181, 136:2-16 (referring to EX1001, FIG. 2). The side of this float is spaced apart from the bottom surface of the floats

and would therefore properly be considered “next to” the underside of the vehicle—as opposed to being strictly “on” the vehicle underside. Thus, “along,” as understood by Nuhn’s expert, properly covers structure that is positioned “on or next to.”



EX1001, FIG. 2 (annotated).

III. THE SUBSTITUTE CLAIMS LACK WRITTEN DESCRIPTION SUPPORT.

A. The '835 Patent Fails to Disclose “Components of the Vehicle that Are Submerged . . . Are Spaced from and Positioned Directly Forward of and Directly Rearward of the Pump Housing.”

Nuhn’s new claim construction for “directly rearward” in its Reply requires the pump housing and “submerged components” to be positioned at “substantially the same” vertical height. To the extent this construction requires the pump housing and the submerged components to literally intersect the same horizontal plane, the '835 Patent fails to disclose this three-dimensional arrangement.

The '835 Patent never uses “directly rearward” to describe any arrangement of components. Furthermore, the '835 Patent figures fail to provide support for the

pump housing and the submerged components being located in the same horizontal plane. During his deposition, Nuhn's expert, Mr. Prairie testified that if the pump housing were positioned below the bottom surface of the buoyant elements, then the buoyant elements would not be "directly rearward of the pump housing." EX1181, 149:18-151:6. However, Mr. Prairie was unable to determine from the isometric figures of the pump housing whether the pump housing was shown positioned above or below the bottom surface of the buoyant elements. *Id.*, 118:5-120:12 (discussing FIGS. 3 and 8). Nor was Mr. Prairie able to tell whether the figures of FIGS. 3 and 8 depicted the pump in a raised or a lowered position. *Id.*, 113:12-114:12; 119:7-119:16; 140:15-144:9. Mr. Prairie also acknowledged in his deposition that the '835 Patent does not indicate how high the pump housing can be raised. *Id.*, 112:6-18.

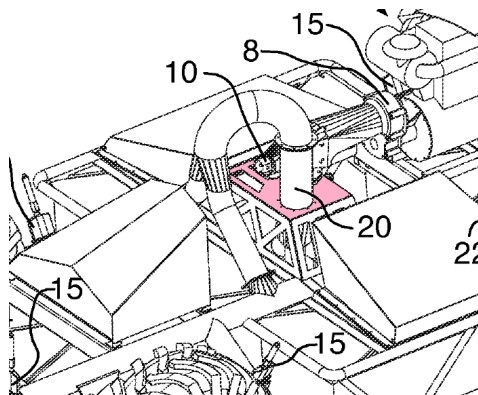
It may have been obvious to a POSA reading the '835 Patent to arrange the pump housing in the same horizontal plane as the buoyant elements. Likewise, it may have been obvious to a POSA to configure the pump linear actuators to raise the pump housing above the bottom surface of the buoyant elements. However, neither that position nor functionality is literally or inherently disclosed in the '835 Patent. There is no adequate written description as a matter of law. *See Ariad Pharms.*, 598 F.3d at 1352 ("[A] description that merely renders the invention obvious does not satisfy the [written description] requirement[.]"). The '835 Patent fails to convey to a POSA that the rear buoyant element is in the same horizontal

plane as the pump housing. Thus, to the extent that this term requires such an arrangement, substitute claims 41, 79, and 80 lack written description support.

B. The '835 Patent Fails to Disclose that the “Pump Housing Is Mounted to the Underside of the Floatable Vehicle Body”

Misquoting its claim language, Nuhn summarily concludes in its Reply that the “liquid manure pump” (as opposed to the “pump housing”) may be mounted to the underside of the vehicle by (1) a linear actuator, or (2) a lever structure. However, the claimed “pump housing” is not mounted to the underside of the vehicle. Nuhn’s bald assertions otherwise are belied by its own expert’s testimony.

During his deposition, Mr. Prairie refused to opine on whether the pump housing is connected to the underside of the vehicle when using non-lever (i.e. hydraulic actuator) configurations. EX1181, 64:11-23 (“I have not provided an opinion [on that configuration] and I am not prepared to provide one at this time.”). Instead, Mr. Prairie conceded that the shielding (pink) to which the actuator is mounted in FIG. 2 is located at the top side of the vehicle. *Id.*, 57:13-59:9.



EX1001, FIG. 2 (annotated).

As to the lever structure, Mr. Prairie’s opinion is based on the wrong standard. Mr. Prairie testified that the pump lever structure would be configured like the lever structure of the wheels (connected to the sides of the buoyant elements). *Id.*, 65:20-66:12. Conceding that there is no disclosure of such a lever structure being mounted to the underside, Mr. Prairie concludes that this term is supported because POSAs would have “most likely” connected such a lever structure to the vehicle underside. *Id.*, 107:1-108:13. But Mr. Prairie’s “most likely” standard is the wrong standard for assessing written description support. *See Novartis Pharms. Corp. v. Accord Healthcare, Inc.*, 38 F.4th 1013, 1017 n.2 (Fed. Cir. 2022).

Regardless, in arguing that the ’835 Patent’s lever structure provides support for this element, Nuhn contradicts itself, as it already argued that POSAs connecting a pump to a vehicle using such a lever structure would have mounted the pump to the top deck. *See* Paper 50 at 7 (referring to Puck and Sundstrom). Likewise, Nuhn argued that such lever mounted pumps fail to meet its “vertical driveshaft” and “constant angular orientation” limitations recited in these same claims. *Id.* at 7-8.

IV. PUCK, BRYHAM, AND MANURE-MANAGER RENDER OBVIOUS CLAIMS 22-42.

A. The Puck Combination Renders Obvious a Pump Housing and Impeller “Positioned Along the Underside of the Floatable Vehicle Body.”

Seemingly basing its arguments on the alignment of the Nuhn Pump PTO input with the Puck engine drive shaft, Nuhn fails to address that the Nuhn Pump would easily be powered using Bryham’s hydraulic drivetrain. As confirmed by Mr. Puck, the inventor of EX1014 and designer of the Puck Boat, such hydraulic powertrains provide enhanced flexibility when positioning the pump on the floatable vehicle body. EX1158, 50:3-52:17 (discussing EX1159, 2); EX1174, ¶¶59-62.

Nuhn argues that the Puck prototype boat would have taught a POSA to extend the Nuhn Pump housing many feet below the underside of the boat. Paper 50 at 5-7. However, in his deposition, Mr. Puck explained that since the time that the prototype was made, it became known to pump the watery liquid manure from below the surface of a lagoon, as opposed to pumping the thicker sludge layer from the bottom of the lagoon, because it made the pumping and agitation process more efficient. EX1158, 259:6-24, 73:20-74:19; EX1121, ¶14; EX1174, ¶¶46-51. Such an arrangement also provides for easy extraction of the vehicle without interference between the pump and the ground. EX1174, ¶¶52-55. This is evidenced by both Sundstrom and Puck placing their pump intakes along the underside of the vehicles in their production model products. *See, e.g.*, EX1164, 17, 25; EX1120; EX1156.

Thus, a POSA would have arranged the Nuhn Pump intake along the underside of the vehicle (in the same location as the opening of Puck's intake pipe) when using the Nuhn Pump on the Puck vehicle. EX1174, ¶69; *see also* IPR2023-01161, Paper 71, 56-58.

B. The Puck Combination Renders Obvious a Pump Housing “Mounted to the Underside of the Floatable Vehicle Body.”

A POSA would have understood it to be obvious to have added a mounting point between the Nuhn Pump housing and the underside of the vehicle, in addition to any other mounting locations between the Nuhn Pump and the Puck vehicle, to provide enhanced stability and longevity for the vehicle. EX1174, ¶108.

As explained by Dr. Winkel, centrifugal pumps, such as the Nuhn Pump, are known to produce vibrations, which can be caused by the power source, rotational imbalance of the impeller, and hydrodynamic effects. *Id.* Such vibrations can lead to increased failures and wear on the pump. *Id.* POSAs would have understood that adding another mounting point between the pump housing and the vehicle underside would have provided better load distribution for the weight of the pump and would have mitigated negative effects of the pump vibrations, thereby increasing stability and the longevity of the vehicle. *Id.*

C. The Puck Combination Renders Obvious “a Vertical Driveshaft” and “a Constant Angular Orientation Relative to the Floatable Vehicle Body.”

Arguing against the Nuhn Pump combination, Nuhn asserts that these terms foreclose the use of a lever mounted pump. Paper 50 at 7-8. But this is contrary to Nuhn’s expert’s testimony, indicating that a lever mounted pump is the only type of pump that meets the “mounted to the underside” elements of claims 79 and 80. EX1181, 64:5-23; *supra* Section III.B.

Regardless, a POSA would have understood that the pivotability functions would not be necessary when implementing the Nuhn Pump on Puck. EX1174, ¶63; *see also* IPR2023-01161, Paper 71 at 57-58. Nowhere is pivotability described as being a required feature for the Nuhn Pump. EX1174, ¶63. A POSA would have understood that such functionality would further complicate the design of the vehicle, provide an additional point of failure, and cause stability issues when mounted on the floating vehicle. *Id.*, ¶45. A POSA would have also understood that it would be beneficial to forgo pivotability of the Nuhn Pump in favor of securely mounting the Nuhn Pump in the more stable central position in which Puck’s pump is placed. *Id.*, ¶46. When fixedly attaching the Nuhn Pump to Puck, the Nuhn Pump would be arranged such that it would have “a vertical driveshaft” and “a constant angular orientation relative to the floatable vehicle body.” *Id.*, ¶¶69-71.

D. The Puck Combination Renders Obvious “Submerged Components/Portions of the Vehicle to Be Positioned Forward and Rearward of the Pump Housing Along the Longitudinal Centerline.”

Nuhn concedes that the Puck Boat discloses a rear nozzle rearward of the pump intake. POSAs would have been motivated to use this arrangement when using the Nuhn Pump so the pump could be kept closer to the center of the vehicle, thereby increasing the stability of the vehicle. EX1174, ¶¶46, 81; EX1158, 73:20-74:19.

While Nuhn argues that the rear yoke of the vehicle would not be “reasonably understood” to be a “submerged component/portion,” Nuhn ignores the evidence submitted with the Opposition which indicates that in various modes of operation, the rear yoke is indeed positioned below the surface of the lagoon. Paper 47 at 15-16. POSAs would have understood that components positioned below the surface of a lagoon are submerged. Nuhn does not provide any arguments otherwise.

Nuhn also fails to argue how the rear yoke nozzles, which are also submerged when the vehicle is floating, do not meet this limitation. These nozzles (part of the larger “rear nozzle yoke” component) are positioned along the longitudinal centerline and rearward of the pump housing, thereby meeting this element.



EX1165, 0:38; *see also* EX1158, 111:1-112:8 (discussing EX1165).

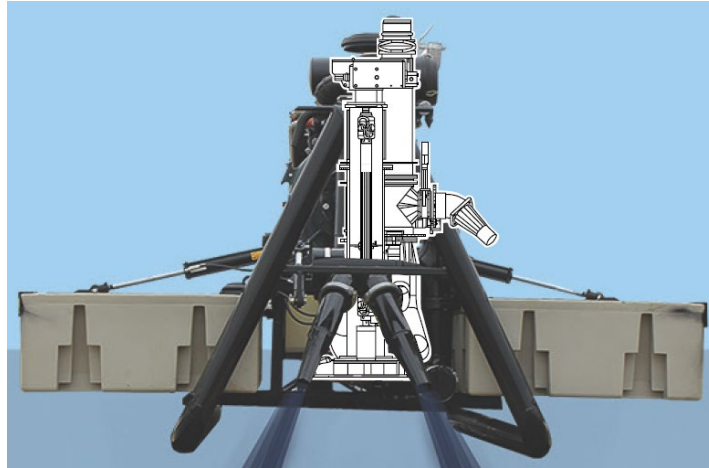
E. The Puck Combination Renders Obvious “Submerged Components/Portions of the Vehicle to be Positioned Directly Rearward of the Pump Housing.”

Nuhn’s new claim construction arguments for “directly behind” require “the submerged component / portion [to] be behind the pump housing and [to] be at substantially the same height.” Paper 50 at 10. Even accepting this construction, substitute claims 41, 79, and 80 are invalid.

i. Nuhn’s Proposed Pump Arrangement Is Wrong.

In support of its arguments, Nuhn provides an image of the Nuhn Pump overlaid on the Puck Boat with the Nuhn Pump inexplicably extending far below the underside of the Puck Boat. Paper 50 at 7. As explained before, a POSA would have understood that the Nuhn Pump PTO input need not be vertically aligned with the Puck engine output, as the Nuhn Pump could easily be powered using Bryham’s hydraulic transmission. EX1174, ¶¶59-62. Furthermore, as confirmed by Ben Puck, POSAs would have understood that it would be beneficial to draw liquid manure from just below the lagoon surface, adjacent the Puck intake pipe. EX1158, 259:6-18; EX1121, ¶14. POSAs would have also understood that this would have provided the added benefit of preventing the pump from being hung up on the bottom of the lagoon. EX1174, ¶¶54-58. Thus, POSAs would have understood that the Nuhn Pump would be more properly arranged with the pump intake positioned along the

underside of the Puck vehicle, as shown below. *Id.* When arranged in this location, a POSA would have understood the Nuhn Pump housing to be at “substantially the same height” as the rear yoke and nozzles. Nuhn does not address this arrangement.



EX1160, 2; EX2101, FIG. 2 (modified).

ii. The Rear Yoke and Nozzles Would Function “to Keep Floating Solid Material Away from the Bottom Fluid Opening in the Pump Housing[.]”

Misquoting its claim language, Nuhn argues that the rear nozzle and yoke of the Puck Boat combination would not function “to keep solid [sic] material away from the bottom fluid opening in the pump housing of the immersible liquid manure pump[.]” Paper 50 at 11. However, the substitute claims recite “to keep *floating* solid material away....” Paper 42 at 28, 33, and 40-41. (emphasis added). This distinction is important, as Nuhn appears to base its arguments relating to this element on whether the “rear nozzle yoke” would obstruct portions of the submerged pump housing from view. Paper 50 at 11. Regardless of whether the pump housing

is obstructed from view when observed from below the surface of the lagoon, the rear nozzle yoke would certainly function to push *floating* solid material (at the surface of the lagoon) away from the area adjacent the Nuhn Pump inlet, at least when the rear nozzle yoke is submerged at the surface of the liquid manure lagoon. EX1174, ¶83, 85. Nuhn fails to address this point.

iii. A POSA Would Have Been Motivated to Add an Additional Floatable Element Rearward of the Pump Housing.

As noted in Bazooka’s Opposition, POSAs would also have understood that including an additional dock section, directly rearward of the Nuhn Pump housing, would have been obvious. *See* Paper 47 at 16. Nuhn fails to address this argument.

Puck describes its buoyant elements as “interlocking” and “modular dock sections[,]” noting that “additional dock sections” may be used to increase the “buoyancy of the vessel[.]” EX1014, ¶[0023]. As described by Puck, “connector pins (30) allow the modular dock sections (26) to connect to additional dock sections in a manner such as that known in the art.” *Id.*

In addition to increasing the buoyancy of the vehicle, Mr. Puck explained in his deposition that using the buoyant elements surrounding the pump intake on the Puck vehicle “worked as [a] blockage to limit” and “capture[] the solids and hold[] them away from the pump[.]” EX1158, 74:12-19. A POSA would have recognized and appreciated this functionality provided by these buoyant elements and would

have understood that including an additional buoyant element rearward of the Nuhn Pump intake (i.e. directly rearward of the Nuhn Pump housing when Puck's pump is replaced with the Nuhn Pump) would be desirable to further limit the ability of solids in the lagoon to float towards the intake of the pump, thereby increasing the efficiency of the pumping and agitation process. EX1174, ¶87.

While certain modifications to Puck's frame may be necessary for accommodating this additional dock section rearward of the pump intake, a POSA would have understood such modifications to have been relatively simple. *Id.*, ¶88. The most significant modification would be to simply extend the metal frame of the vehicle rearwardly to provide additional space for securing and supporting this buoyant element. *Id.* Compared to the level of skill needed to design and manufacture the Puck Boat, POSAs would have understood extending the metal frame to accommodate another dock section to be trivial. *Id.*

POSAs would have further been motivated to arrange floating elements rearward of the pump in view of other prior art agitation boats, such as Mr. Puck's prototype agitation boat, which was publicly used as early as 2004 (EX1158, 46:12-47:3), and the Sundstrom Boat, which was publicly used as early as 2006 (EX1120, ¶¶7-9). EX1174, ¶89. Each of these prior art agitation boats utilized a pump housing located along the underside of the vehicle with a floatable element located directly rearward of the pump housing. *Id.* Thus, a POSA would have understood that

including an additional modular dock section directly rearward of the pump housing would have been obvious, and would have been motivated to do so to provide enhanced floatation as well as a barrier for keeping floating solids away from the pump intake. *Id.*

**V. THE REVISED MOTION TO AMEND FAILS TO COMPLY WITH
37 C.F.R. § 42.121**

In its Reply, Nuhn belatedly files various documents with tracked changes, which it alleges to be comparisons between its provisional application and its various non-provisional continuation applications. Nonetheless, Nuhn still fails to even submit a copy of U.S. Application No. 17/201,100, the '789 PCT, or any of the other applications which matured into any of the parent patents for the '835 Patent. Nuhn fails to comply with 37 C.F.R. § 42.121.

VI. CONCLUSION

For at least the reasons stated above, Petitioner asks that the PTAB deny Patent Owner's motion to amend.

Respectfully submitted,

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CERTIFICATION OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. § 42.6(e), that service was made on Counsel for Patent Owner as detailed below.

Date of service:	February 3, 2025
Manner of service:	Electronic mail addressed to: bluchsinger@harnessip.com syackey@harnessip.com mcutler@harnessip.com
Documents served:	Petitioner's Sur-Reply in Opposition to the Motion to Amend <i>Inter Partes</i> Review of U.S. Patent No. 11,491,835
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