

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BAZOOKA-FARMSTAR, LLC,

Petitioner,

v.

NUHN INDUSTRIES LTD.,

Patent Owner.

Case No. IPR2024-00004
U.S. Patent No. 11,491,835

PATENT OWNER'S RESPONSE
(under 37 C.F.R. §42.120)

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I. INTRODUCTION

The invention claimed in U.S. Patent No. 11,491,835 (“the ‘835 Patent”) created a new class of manure lagoon agitation equipment, was a wild commercial success, and is greater than the sum of its parts. Relying on hindsight, the Petitioner asserts that the claimed invention is simplistic and obvious. But all of the claims of the ‘835 Patent are application specific, are explicitly tied to manure lagoon agitation, and therefore require more than just a remote-controlled amphibious vehicle with a pump as the Petitioner suggests. Indeed, all four independent claims (claims 1, 17, 39, and 40) explicitly require “a hydraulically powered liquid manure mover” that is “positioned within the liquid manure when the vehicle is floating.”

For decades, the agricultural farming industry faced a difficult and time-consuming challenge of uniformly and adequately agitating livestock manure lagoons. Difficult and time-consuming challenges arose from the large size of modern manure lagoons, steep/muddy/overgrown banks making access difficult, and/or the formation of a thick crust comprising bedding material (e.g., straw) and vegetation growth on the surface of manure lagoons, which needed to be broken up for agitation and/or pump out.

The invention embodied in the ‘835 Patent brought relief to livestock farmers by delivering a machine that ***both*** *breaks up the solids* ***and*** *forms a*

*homogeneous mixture of liquids and suspended solids in a manure lagoon in preparation for subsequent pump out and land application as fertilizer.*¹ The commercial embodiment of the invention claimed in the ‘835 Patent (“Nuhn’s Lagoon Crawler”), was first introduced to the market by Nuhn on August 20-21, 2013 and was a wild commercial success. Nuhn’s Lagoon Crawler was the first and only piece of manure lagoon agitation equipment capable of being remotely driven into and out of manure lagoons for the job of breaking up crust formed on the surface of the lagoon and agitating/mixing the liquids and solids in the manure lagoon. Nuhn’s Lagoon Crawler was and continues to be innovation dynamite for the livestock farming industry, becoming an overnight commercial success, unexpectedly solved a decades-old challenge in an efficient and timely manner, and is now being copied by Petitioner.

II. MANURE LAGOONS AND STATE OF THE ART

Agricultural manure lagoons are holding ponds for liquid manure, which comprises both liquid and solid material.² By contrast, solid manure is manure that is not in a liquid, does not flow, and is typically handled by shovels, wheel barrows, bucket loaders, dump trucks/trailers, etc. as opposed to manure pumps and tank trucks/trailers.³ Accordingly, solid manure exists outside of manure

¹ EX1001, 8:5-27.

² EX1014, ¶ [0026].

³ EX2094, ¶90.

lagoons.⁴ Solid manure does not refer to the solids in a manure lagoon, which are in a liquid and are therefore part of the liquid manure.⁵ It is desirable for liquid manure to be agitated and mixed prior to being pumped out of an agricultural lagoon and spread onto fields.⁶ The agitation, mixing and pumping of liquid manure from agricultural lagoon with prior known devices and methods, however, presented various challenges.⁷

Prior to the invention of the '835 Patent, agitating, mixing, and pumping liquid manure from an agricultural lagoon relied on: (1) side-entry lagoon agitators/pumps, and/or (2) agitation boats/barges.⁸ Agitation/pumping technology evolved over the decades into higher-power and high-volume pumps or agitators, which caused large “sand bars” to form in the center of agricultural lagoons. Agitation/pumping boats and barges attempted to address this problem; however, they were still difficult and time consuming to maneuver *through* lagoons, due to the varying solid and liquid composition of liquid manure contained in agricultural lagoon, and were known to get stuck or beached in manure lagoons.⁹ No prior technical innovation solved the

⁴ EX2094, ¶90.

⁵ EX2094, ¶90.

⁶ EX1014, ¶¶ [0002] - [0010].

⁷ EX1014, ¶¶ [0002] - [0010]; EX1001, 1:32-51.

⁸ EX1014, ¶ [0002] – [0010].

⁹ EX2094, ¶113.

challenging task of creating a vehicle that could **drive/chew through the crust formed on a manure lagoon and break it up and mix it with the liquids in the lagoon.**¹⁰

As Bazooka states publicly:¹¹

The propellers create 4,000 pounds of thrust for agitation and maneuvering functions directly below the boat, establishing a solid center of gravity for stability. That means this well-balanced machine can move in any direction, even in the thickest sludge where most pumps cannot operate.

That means this well-balanced machine
can move in any direction,
even in the thickest sludge
where most pumps cannot operate.

Because most pumps cannot operate in the thick sludge of manure lagoons, inventors sought to improve upon traditional agitators/pumps, but ran into various drawbacks and problems.¹²

Attempts to overcome challenges with side/land-entry agitators/pumps included moving agitator pumps or barges “with cables by operators on the shore” of a lagoon.¹³ These floating barges, however, proved difficult and time consuming

¹⁰ EX1014, ¶¶ [0002] - [0010]; EX1001, 1:32-51.

¹¹ EX2033, 9.

¹² Paper 1, 13; EX1014, ¶ [0005].

¹³ EX1014, ¶ [0006].

to launch and move through a lagoon with cables.¹⁴

A second attempted solution was the development of a remote-controlled agitation boat.¹⁵ While this solved some of the maneuverability and efficiency issues faced by cable-drawn floating barges and/or side/land-entry agitators and pumps, these remote-controlled agitation boats could still become beached by solid crust formations, which can be up to six feet deep, as well as by sand and/or sludge buildups (i.e., “sand bars” or “islands” in manure lagoons).¹⁶ In sum, the use of side/land-entry pumps/agitators and agitation barges/boats failed to present a technical innovation solving the problem presented by the time-consuming job of *breaking up and mixing a crust formed on a manure*.¹⁷

III. THE ‘835 PATENT

After first inventing several tractor-mounted manure pumps for agitating manure lagoons from the bank, Ian Nuhn, the named inventor on the ‘835 Patent, saw a need to better solve problems encountered with thick crust and large lagoons.¹⁸ The result is protected by the ‘835 Patent - a class building amphibious, remotely-controlled, vehicle that crawls through an agricultural manure lagoon, acting like an icebreaker against the solid crust of lagoons, while

¹⁴ EX1014, ¶ [0007].

¹⁵ EX1014, ¶ [0005].

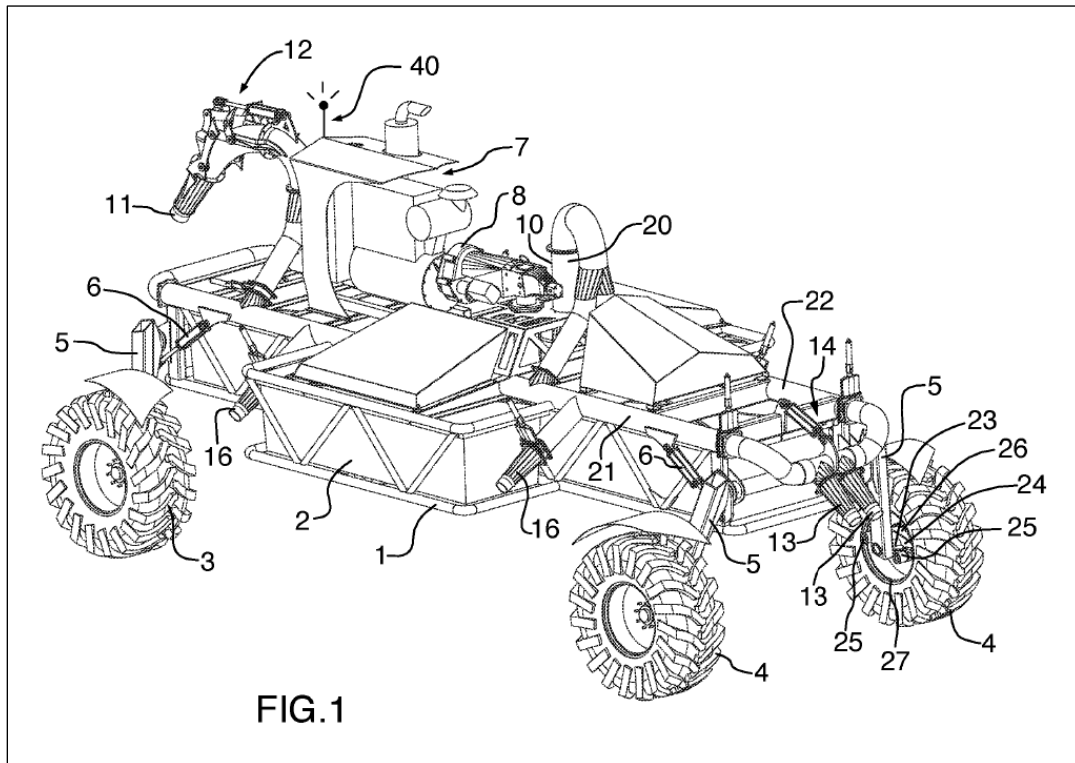
¹⁶ EX2094, ¶ 113.

¹⁷ EX1014, ¶¶ [0002] - [0010]; EX1001, 1:32-51.

¹⁸ EX2083, ¶ 8.

simultaneously agitating and mixing the contents of the manure lagoon.

Nuhn's novel machine is depicted in Figure 1 of the '835 Patent:



With the use of a wireless remote control, this new class of manure agitation equipment is remotely driven into and through manure lagoons, which provides enhanced moveability and the ability for the vehicle to crawl / chew through thick crust comprising thickened/semi-dried manure, animal bedding material (such as straw), and growing vegetation, which can reach six feet in thickness.¹⁹ A floatable vehicle body allows the vehicle to float on the manure lagoon once the weight of the vehicle breaks through the crust and displaces broken portions of the crust

¹⁹ EX2003, 1:13-58.

under and adjacent to the vehicle.²⁰ The vehicle is driven through a manure lagoon by a remote operator to control the vehicle when ground engaging and floating. The hydraulically powered liquid manure mover generates a flow of liquid manure that mixes/agitates the contents of the manure lagoon, helps break up the thick crust formed on the surface of the lagoon, and may also be used to control the movement (i.e., speed and/or direction) of the vehicle when the vehicle is floating in the lagoon.²¹

IV. LEVEL OF ORDINARY SKILL

A. Patent Owner's Definition of a POSITA

The '835 Patent repeatably mentions farming, manure, and the problems encountered when storing animal manure in farm lagoons or pits. Moreover, all of the claims of the '835 Patent are explicitly directed to a manure lagoon agitation vehicle, since all four independent claims (claims 1, 17, 39, and 40) explicitly require "a hydraulically powered liquid manure mover" that is "positioned within the liquid manure when the vehicle is floating."

Thus, a person of ordinary skill in the art ("POSITA") is someone with intimate knowledge of manure lagoon agitation equipment and the problems presented by the agitation and care of agricultural manure lagoons, whether it be

²⁰ EX1001, 8:21-23; *see also e.g.*, EX1001, 8:38.

²¹ EX 1001, 8:17-23.

from direct experience or education. Specifically, a POSITA is “a livestock farmer or commercial manure applicator familiar with manure agitation equipment or an engineer with at least 2 years of experience designing agricultural equipment and knowledge of manure agitation equipment.”²² Both the Petition and the Institution Decision fail to address the reality that in the agricultural industry, the end users of manure agitation equipment are highly knowledgeable of its design, operation, and limitations because they use, *maintain, and modify it*.²³ The definition of a POSITA must focus on these individuals and the experience they bring over formulations of engineering degrees and generic marine or off-road vehicle experience as Petitioner proposes.

B. Petitioner’s POSITA Would Not Be Familiar With Agricultural Farming And The Care Of Agricultural Manure Lagoons

Petitioner asserts that “[a]s of August 19, 2013, a POSA had a mechanical engineering degree, and two years of professional experience in marine and off-road vehicles. . . [and] a working knowledge of fluid pumps and livestock manure.”²⁴

Petitioner’s definition of a POSITA incorrectly excludes those most knowledgeable in the care of agricultural lagoons, and specifically those familiar

²² EX2094, ¶64.

²³ EX2094, ¶59.

²⁴ Paper 1, 31.

with agitating and pumping agricultural lagoons (e.g., “a livestock farmer or commercial manure applicators familiar with manure agitation equipment. . .”).²⁵

The portion of Petitioner’s definition stating that a “[l]ack of work experience can be remedied by additional education, and vice versa” does not save its definition because the work experience Petitioner’s definition discusses is “professional experience in marine and off-road vehicles”, rather than work experience pertaining to *manure agitation equipment*. In other words, under Petitioner’s definition, lack of education (i.e., lack of a mechanical engineering degree) can be remedied by more than two years of professional experience in “marine and off-road vehicles.” So under Petitioner’s definition, a person without an engineering degree, but two decades of work experience pertaining to manure agitation equipment would not qualify as a POSITA. This highlights the problem with Petitioner’s definition. General experience in “marine and off-road vehicles” does not equate to experience in a niche art—manure lagoon agitation equipment.²⁶

Petitioner’s definition of a POSITA only requires “a working knowledge of ... livestock manure,” which means that a POSITA would only need to be aware of “livestock manure” generally and would not need to be aware of manure lagoons or the manure agitation equipment used to mix and maintain manure lagoons. This

²⁵ Paper 9, 32.

²⁶ Paper 1, 31; EX2094, ¶¶59-60.

is not simply an academic distinction, but rather has some geographic significance because manure lagoons of the type discussed here (i.e., uncovered, outdoor manure storage ponds) are outlawed in various parts of the world, including in much of Europe.²⁷ Thus, Petitioner’s POSITA would not have to be familiar with the manure lagoons generally, let alone the hazards and the problems faced with agitating, mixing, and pumping from manure lagoons.²⁸

Petitioner’s definition also places an incorrect focus on “fluid pumps.” Unlike the claims of Nuhn’s ‘425 Patent, which require “a fluid pump for pumping liquid manure,” the claims of the ‘835 Patent require “a hydraulically powered liquid manure mover.” As a result, the definition of a POSITA should place emphasis on “manure agitation equipment” as opposed to “fluid pumps.”

Petitioner criticizes Patent Owner’s definition of a POSITA by arguing that “[a] farmer would not have been equipped to design amphibious vehicles. . . . And an engineer with working knowledge of liquid manure would not have required experience designing **agricultural equipment** to build ‘pumps and vehicles equipped for pumping’”.²⁹ These arguments are based on a faulty reading of Patent Owner’s definition, which requires a livestock farmer to **also** be “familiar with manure agitation equipment.” Patent Owner’s definition does not mean that all

²⁷ EX2094, ¶19

²⁸ Paper 1, 11-13.

²⁹ Paper 1, 32 (emphasis added).

farmers or all livestock farmers qualify as a POSITA. Similarly, Petitioner’s criticism overlooks the fact that “an engineer with ... knowledge of manure agitation equipment” would necessarily have knowledge of pumps because such a person would have knowledge of the manure pumps and propellers used in manure agitation equipment.

V. CLAIM INTERPRETATION

A. “Liquid Manure Mover” is a Means-Plus-Function Limitation Under 35 U.S.C. § 112(f)

Both the Petitioner and the Patent Owner, and their respective experts, agree that the term “liquid manure mover” does not have a sufficiently definite meaning such that §112(f) applies.³⁰ It is also undisputed that the function of the term “liquid manure mover” is to “move liquid manure”.³¹ With respect to the means for performing the recited function, the parties appear to agree that the means disclosed in the specification for “liquid manure mover” is *at least* “a pump, a conduit, and a nozzle”.³² Because the specification talks specifically about an immersible manure pump rather than a generic pump, Patent Owner submits that the corresponding structure disclosed in the specification for a ‘liquid manure

³⁰ EX2094, ¶69, *see also* Paper 1, 33; EX1004, ¶¶76-77.

³¹ Paper 1, 35; Paper 12, 14.

³² Paper 1, 34, Paper 9, 33.

mover’ is more appropriately formulated as an “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s).”³³

The specification of the ‘835 Patent does not describe a generic pump, but instead describes an immersible manure pump that can handle solid material and that does not have to be primed:

The fluid pump may comprise a pump housing configured for immersion within the fluid. The pump housing may comprise a bottom fluid inlet and at least two tangential fluid outlets ... Lowering the fluid pump for immersion into the fluid obviates the need for priming the fluid pump, which can be problematic when the fluid is manure comprising solid materials that can plug the pump or priming structure. Immersion of the pump also simplifies intermittent operation of the pump, due to eliminating potential loss of prime, and reduces the need for pump maintenance.³⁴

Patent Owner’s definition of the pump structure is also supported by the language of independent claims 1, 17, 39, and 40 of the ‘835 Patent, which all require “the liquid manure mover positioned within liquid manure when the vehicle is floating.” The Board incorrectly interpreted “immersible” to be a functional limitation in its Institution Decision. It is not a functional limitation, but a structural one. First, the liquid manure pump must be located on the vehicle so that it is positioned within liquid manure when the vehicle is floating in order to satisfy this limitation. Claim language, such as this, discussing the position/location of an

³³ EX2094, ¶69.

³⁴ EX1001, 2:65-3:20

element is structural, not functional. Second, immersible liquid manure pumps (like the one disclosed in the ‘835 Patent) have a different structure from non-immersible liquid manure pumps (like the one disclosed in Puck), which require a different inlet/housing configuration with pump priming structures, so this is a material structural distinction.³⁵

Independent claims 1 and 39 also include a later limitation which recites that the wireless remote control is configured to “control a flow of liquid manure from a ***liquid manure pump***”.³⁶ These later limitations of claims 1 and 39 of the ‘835 Patent instruct that the means for causing movement of the liquid manure is a “***liquid manure pump***” and not simply a generic “pump” as Petitioner argues. Accordingly, a POSITA would understand, based on the specification and claims of the ‘835 Patent, the sum of the means that “move liquid manure” would be “*an immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s)*”.³⁷

Finally, the Institution Decision appears to suggest that Patent Owner’s definition may be an improper construction in view of claims 1 and 39 also reciting the term “liquid manure pump.” But there is no inconsistency here. The later limitations of claims 1 and 39 describe a wireless remote control structure that is configured to control a flow of liquid manure coming from one of the components

³⁵ EX1014, [0031]; EX2094, ¶386.

³⁶ EX1001, 8:52-53.

³⁷ EX2094, ¶69.

(i.e., the liquid manure pump) of a multi-component assembly (i.e., the liquid manure mover). This could be done for example by wirelessly controlling the speed of the liquid manure pump. Claims 17 and 40 alternatively describe a wireless remote control structure that is configured to control a flow of liquid manure coming from the overall assembly (i.e., the liquid manure mover). This could be done for example by wirelessly controlling the orientation of the nozzle(s) or by wirelessly controlling the speed of the liquid manure pump.

B. Construction of “Liquid Manure Pump”

The Institution Decision preliminarily found that a “liquid manure pump” is a “pump with a structure that is capable of pumping liquid with suspended solids.”³⁸ But this overgeneralizes and impermissibly broadens the scope of the “liquid manure pump” limitation to no longer require a pump that is capable of pumping liquid manure. Patent Owner does not dispute that a POSITA would understand “liquid manure” as being a “liquid with suspended solids,” but that does not give license to read the words “liquid manure” completely out of the construction for “liquid manure pump.” It is not enough to say that a “liquid manure pump” is “pump with a structure that is capable of pumping liquid with suspended solids” because, unlike water, liquid manure behaves as a non-Newtonian fluid and therefore has different pumping characteristics than water

³⁸ Paper 12, 18.

with suspended sand or other sediments.³⁹ The words “liquid manure” cannot be read out of the “liquid manure pump” limitation. A “liquid manure pump” should be construed as a “pump that pumps liquid manure” (for the reasons stated in Patent Owner’s Preliminary Response) or alternatively a “pump with a structure that is capable of pumping *liquid manure* with suspended solids.”⁴⁰

The Institution Decision further suggests that the Parties need to “provide argument . . . as to what specific structure is required to pump liquid manure.”⁴¹ But that attempts to apply a bright-line rule to a question that is not clear cut. For example, the “Liquid Manure Application Systems Design Manual” (EX1034) cited by Petitioner identifies a number of different types of pumps including closed impeller, semi-open impeller, open impeller, elevator, helical screw, piston, and air-driven pumps.⁴² There is no bright line rule delineating these various pump types where one type is universally considered a liquid manure pump and another type is not.⁴³ Most likely any one of these types of pumps could be designed to pump liquid manure if provided with an appropriate size, tolerances/clearances, flow rate, pump head, power requirements, and appropriate housing, impeller,

³⁹ EX2094, ¶¶115-116; EX2097, 2.

⁴⁰ EX2094, ¶¶120-124.

⁴¹ Paper 12, 17-18.

⁴² EX1038, 51-52.

⁴³ EX2094, ¶82.

inlet, outlet, and bearing design.⁴⁴ Because there are no bright-line rules, a POSITA would look at the following pieces of evidence to understand if a pump is a “liquid manure pump” (i.e., a “pump that pumps liquid manure” or a “pump with a structure that is capable of pumping liquid manure with suspended solids”):

- (1) was the pump designed to pump liquid manure;
- (2) was the pump marketed as a liquid manure pump;
- (3) has the pump been tested and validated (i.e., proven) for liquid manure pumping applications; and
- (4) does the pump have structure that would become clogged and/or damaged by pumping liquid manure.⁴⁵

The ‘835 Patent discloses an exemplary liquid manure pump, which is described as a “fluid pump 9 [that] comprises a pump housing 18 with three tangential fluid outlets 19 that are combined into a single fluid conduit 20”⁴⁶ and further states that an “example of pump 9 suitable for use with the vehicle is disclosed in co-pending U.S. Patent Application Ser. No. 13/038,189. . . .”⁴⁷ The ‘835 Patent defines non-limiting embodiments of a liquid manure pump that a POSITA would understand as sufficient structure for pumping liquid manure or a

⁴⁴ EX2094, ¶82.

⁴⁵ EX2094, ¶83.

⁴⁶ EX1001, 5:43-45.

⁴⁷ EX1001, 7:43-45.

liquid with suspended solids.⁴⁸ If a pump departed from this exemplary design, then a POSITA would look to evidence of the enumerated factors above to determine if the pump could accurately be characterized as a “liquid manure pump.”⁴⁹

VI. GROUND 1: CLAIMS 1-10, 13-26, AND 29-40 ARE NOT ANTICIPATED BY CARRIER

A. Carrier’s Water Pump for Fire Fighting

Carrier does not meet the “liquid manure mover” or “liquid manure pump” limitations of the Challenged Claims. There is no evidence in the record that the pump disclosed in Carrier is a “liquid manure pump” (i.e., a “pump that pumps liquid manure” or a “pump with a structure that is capable of pumping liquid manure with suspended solids”). There is no evidence that the pump in Carrier was designed to pump liquid manure, has ever been described or marketed as a liquid manure pump, or has been tested and validated (i.e., proven) for liquid manure pumping applications.⁵⁰ Carrier also discloses pump structures that would become clogged by pumping liquid manure.⁵¹

⁴⁸ EX2094, ¶84.

⁴⁹ EX2094, ¶¶82, 84.

⁵⁰ EX2094, ¶151.

⁵¹ EX2094, ¶¶151-154.

Carrier discloses an amphibious emergency or combat vehicle with *quick-connect* attachments for *fast movement across land*, and not a vehicle for agitating liquid manure in a manure lagoon.⁵² One of Carrier's attachments is a *water pump* for pumping water from a *lake or stream* onto a fire. Carrier does *not teach using its water pump to pump liquid manure* nor does Carrier provide any teachings that would suggest to a POSITA that its water pump might be used to pump *liquid manure* or would be capable of pumping liquid manure, which includes suspended solids.⁵³

Instead, Carrier's disclosure would lead a POSITA to conclude that Carrier's *water pump* would not be capable of pumping liquid manure because it's structure would become clogged by the suspended solids in liquid manure.⁵⁴ In particular, Carrier discloses a "screen to filter debris that would otherwise clog hoses, pump 18 to refill the tank from lakes, ponds, or streams".⁵⁵ A POSITA would understand that the screen in Carrier would quickly become clogged with the suspended solids in liquid manure if and that Carrier's pump, which apparently requires a screen to prevent clogging, would also be incapable of pumping liquid manure if operated without the screen.⁵⁶ *Indeed, Petitioner would agree such a pump would not pump*

⁵² EX1005, ¶¶ [0005], [0027], [0068].

⁵³ EX1005, ¶ [0060], ¶ [0061]; EX2094 ¶154.

⁵⁴ EX2094, ¶¶152-154.

⁵⁵ EX1005, ¶[0063].

⁵⁶ EX2094, ¶154.

liquid manure when itself admits that most pumps cannot operate in the thick sludge found in manure lagoons.⁵⁷

Petitioner has the burden of persuasion and must prove by a preponderance of the evidence that Carrier discloses a liquid manure mover, including a pump that pumps liquid manure or at least a pump that is at least capable of pumping liquid manure, which contains suspended solids. Petitioner does not and cannot meet its burden with a conclusory statements from its expert, such as: the “Carrier pump is necessarily capable of pumping liquid manure”⁵⁸; or, “[f]or the pump system of Carrier to function in these debris-filled environments, it is necessarily capable of passing particulates and debris through the pump system.”⁵⁹ Petitioner’s expert fails to articulate *why* a POSITA would have understood that the water pump disclosed in Carrier, which explicitly requires a screen to prevent solids from entering the water pump, would necessarily be capable of pumping liquid manure with suspended solids.

Petitioner’s Expert opining on inherency and using “necessarily capable” language concedes that Carrier does not expressly disclose a liquid manure pump or a pump that pumps liquid manure. Petitioner’s also expert fails to demonstrate that the ‘sediments and other debris’ in lake or pond water are comparable to liquid

⁵⁷ EX2033, 9.

⁵⁸ EX1004, ¶70.

⁵⁹ EX1004, ¶66.

manure with suspended solids. They are not. Liquid manure contains chunks of semi-hardened manure and bedding material (e.g., straw) and unlike water, behaves as a non-Newtonian fluid when pumped.⁶⁰ Petitioner’s attempt to equate Carrier’s firefighting water pump to a liquid manure pump is unsuccessful, as the CRU repeatedly found during the reexaminations of Patent Owner’s ‘557 and ‘425 Patents.⁶¹

B. Independent Claims 1, 17, 39 and 40

i. Elements [1.3], [17.3], [39.3] and [40.3] – “liquid manure mover positioned within liquid manure when the vehicle is floating”⁶²

Carrier fails to disclose a “liquid manure mover positioned within liquid manure when the vehicle is floating” and therefore cannot anticipate the Challenged Claims. The function of the term “liquid manure mover” is to “move liquid manure” with a manure lagoon and the means for performing the recited function is *at least* “a pump, a conduit, and a nozzle.”⁶³ Petitioner further asserts that “[t]he only structure disclosed in the ‘835 [p]atent that moves liquid manure, is a hydraulically powered, submerged within the liquid manure, and is connected to

⁶⁰ EX2094, ¶¶115-116; EX2097, 2.

⁶¹ EX2031, 6.

⁶² Reference to “Element [No.]” throughout this Paper are to Appendix A of the Petition for Inter Partes Review of U.S. Patent No. 11,491,835, Paper 1, 112-119.

⁶³ Paper 1, 35; Paper 9, 33; Paper 12, 14.

a hydraulic cylinder with an adjustable angular orientation **is the vehicle pumping system comprising the pump, conduit, and nozzle.**⁶⁴ Therefore, in order to anticipate the Challenges Claims according to Petitioner, Carrier must disclose a pump or pumping system that is **submerged** within liquid manure **when the vehicle is floating**. The Petition, however, is silent on how Carrier meets this requirement because it does not.

Petitioner argues that “Carrier discloses that the firefighting system ‘is capable of pumping water from a lake or stream onto a fire.’”⁶⁵ such that Carrier inherently discloses that at least a portion of the pump, conduits, and/or nozzles (liquid manure mover) are positioned within the liquid manure (or lake or stream) when the vehicle is floating to draft fluid from the fluid source.⁶⁶ But a POSITA would not understand the water pumps 202, hoses, and water gun 204 of Carrier as being submersible, expressly or inherently **when the vehicle is floating**.⁶⁷ Notably, the water pumps 202, hoses, and water gun 204 of Carrier are not illustrated or disclosed as being submersible and are instead disclosed **at the top of the Carrier vehicle 100 (i.e., above the water at all times)**.⁶⁸

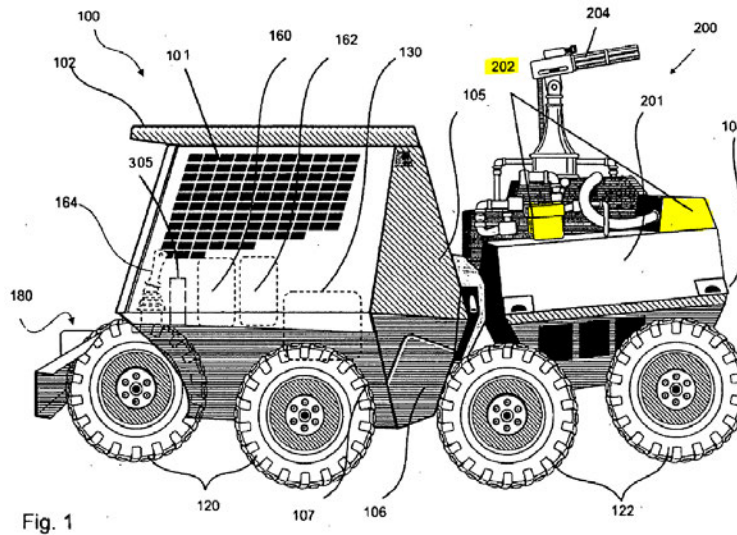
⁶⁴ Paper 1, 34.

⁶⁵ *Id.*, ¶[0061].

⁶⁶ Paper 1, 39-40.

⁶⁷ EX2094, ¶149.

⁶⁸ EX1005, 2; EX2094, ¶149.



Due to their location, the water pumps 202, hoses, and water gun 204 in Carrier clearly would or could not be “positioned within liquid manure when the vehicle is floating” even if this vehicle were driven into a manure lagoon, which itself is neither disclosed or suggested.⁶⁹ Petitioner may be correct in that an inlet end of a hose may be placed in a lake or stream to supply *water* to Carrier’s water gun 204, but that reading of Carrier still falls short of teaching a “liquid manure mover positioned within liquid manure when the vehicle is floating.” In other words, Carrier does not teach that it is configured to pump water from a lake or pond while floating. Instead, Carrier teaches a water tank 201, which is filled using the pumps 202.⁷⁰ The water gun 204 then draws from the water tank 201.⁷¹ If the vehicle were designed to pump water from a lake or pond while floating as

⁶⁹ EX2094, ¶149.

⁷⁰ EX1005, [0050].

⁷¹ EX1005, [0052].

Petitioner suggests, the water tank 201 would be unnecessary.⁷² Thus, Carrier fails to teach that its water pumps 202, hoses, and/or water gun 204 are positioned within a lake or stream when the vehicle is floating, much less liquid manure.⁷³ Furthermore, the function the ‘835 Patent associates with the liquid manure mover (i.e., the purpose associated with moving liquid manure) is to “disrupt the crust and recirculate the manure” in a manure lagoon.⁷⁴ Carrier teaches using the water gun 204 to fight fires, not spray (i.e., recirculate) water back into the lake or stream. Indeed, there would be no reason to do the later based on the teachings of Carrier. Based on Petitioner’s own arguments relative to the “liquid manure mover” means-plus-function claim limitation, Petitioner fails to demonstrate that Carrier discloses a “liquid manure mover positioned within liquid manure when the vehicle is floating”.

ii. Elements [1.5], [17.5], [39.5] and [40.5] “a wireless remote control configured to. . . control a flow of liquid manure from. . .the liquid manure mover/liquid manure pump”

Independent claims 1, 17, 39 and 40 require “a wireless remote control configured to enable an operator who is remote from the vehicle to ... (2) control a flow of liquid manure from . . .” “the liquid manure mover” or “a liquid manure

⁷² EX2094, ¶149.

⁷³ EX2094, ¶149.

⁷⁴ EX1001, 1:37-40; 8:18-21.

pump.” Patent Owner asserts that the means relative to the term “liquid manure mover” includes at least an “immersible liquid manure pump,” which Carrier does not disclose. But even in the event the Board adopts Petitioner’s construction of these terms, it cannot be disputed that the structure required to satisfy the “liquid manure mover” term includes at least a “pump” that pumps liquid manure or is capable of pumping liquid manure, which contains suspended solids. Thus, under no construction does Carrier disclose “a wireless remote control configured to enable an operator who is remote from the vehicle to ... (2) control a flow of liquid manure from . . .” “the liquid manure mover” or “a liquid manure pump.”

The Board found that the parties agree, at a minimum, that liquid manure contains suspended solids (i.e., debris).⁷⁵ Petitioner does not cite any statement in Carrier that would lead a POSITA to the conclusion that Carrier’s pump can/could pump liquid manure with suspended solids. Moreover, it is illogical to conclude that the solids contained in liquid manure would not clog Carrier’s water pump and screen when the crust of an agricultural manure lagoon can be up to six feet thick.⁷⁶

A POSITA would not understand Carrier as disclosing a “liquid manure pump” or a pump that pumps liquid manure or a pump that is capable of pumping

⁷⁵ Paper 12, 18.

⁷⁶ EX2003, 1:46-47.

liquid containing suspended solids, let alone any structure that “control[s] a flow of liquid manure.”⁷⁷ Accordingly, it necessarily follows that a POSITA would not understand Carrier as teaching a wireless remote control of “a flow of liquid manure from a liquid manure pump/the liquid manure mover,” as required by the Challenged Claims.⁷⁸

iii. Carrier Fails to Disclose The Claimed Combination of Elements, Which When Considered Collectively, Define an Amphibious Manure Lagoon Agitation Vehicle

When the claim elements are considered individually, like in the Petitioner’s analysis, the overall picture is lost. The Patent Owner has not claimed a general-purpose amphibious vehicle for carrying an onboard operator and various tool attachments like the vehicle disclosed in Carrier. Instead, when the claim elements are considered together as a claimed combination it is clear that what is claimed is an amphibious vehicle that is specially adapted for the particular purpose of disrupting the crust and recirculating liquid manure in a manure lagoon, where the vehicle can drive into, out of, and navigate the manure lagoon by wireless remote control. Carrier discloses nothing of the sort.

⁷⁷ EX2094, ¶151.

⁷⁸ EX2094, ¶155.

C. Dependent Claims 2-10, 13-16, 18-26, and 29-38

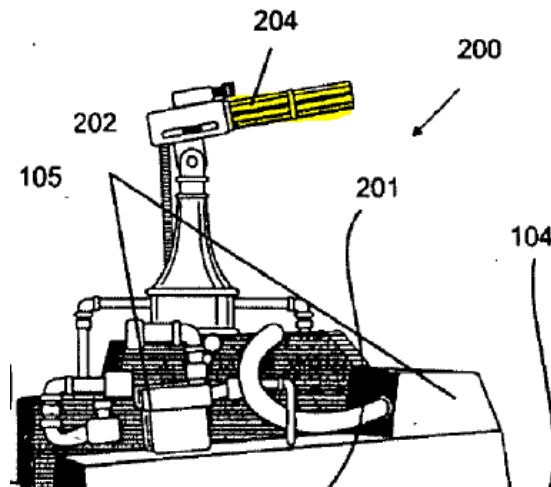
Claims 2-10 and 13-16 depend from Claim 1. Carrier does not anticipate these dependent claims for at least the same reasons described above with respect to Claim 1. Claims 18-26 and 29-38 depend from Claim 17. Carrier does not anticipate these dependent claims for at least the same reasons described above with respect to Claim 17.

D. Dependent Claims 6, 22 and 23

Claims 6, 22, and 23 are also allowable for the additional reason that each requires “a plurality of fluid nozzles fluidly connected to the fluid pump.”

Petitioner makes the strained argument that the singular water gun 204 disclosed in Carrier satisfies these claim limitations because it has multiple outlets at the end of its barrel(s), but this arrangement still only produces a singular jet/spray of water that is discharged in a single direction and flowrate.⁷⁹

⁷⁹ EX1005, 2.



A POSITA would not equate the single water cannon disclosed in Carrier with “a plurality of fluid nozzles . . .” as claimed in the ‘835 Patent, but would instead consider Carrier’s water gun 204 to be a single nozzle.⁸⁰ In the context of the ‘835 Patent, the plurality of nozzles are shown and described as separate assemblies that point in different directions and that have separate/independent articulation structures.⁸¹ Carrier does not disclose multiple nozzles, as that term is used and would be understood by a POSITA within the context of the ‘835 Patent.

VII. CLAIMS 1-40 ARE NON-OBVIOUS (GROUNDS 2-5) IN VIEW OF SECONDARY CONSIDERATIONS

Petitioner improperly uses the ‘835 Patent as a blueprint to piece-meal a reconstruction of an invention that was revolutionary at the time it was introduced. Over the last 50 years, the Federal Circuit has repeatedly warned against going

⁸⁰ EX2094, ¶159.

⁸¹ EX1001, 5:49-62.

down this road. “Importantly, the great challenge of the obviousness judgment is proceeding without any hint of hindsight.” *Star Scientific, Inc., v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011). The objective considerations protect against the prejudice of hindsight bias, which often overlooks that “[t]he genius of invention is often a combination of known elements which in hindsight seems preordained.” *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351 (Fed. Cir. 2001). Simplicity is not inimical to patentability. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992). The patent system is not foreclosed to those who make simple inventions. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1572, (Fed. Cir. 1987). We are admonished “[t]hat which may be made clear and thus ‘obvious’ to a court, with the invention fully diagrammed and aided . . . may have been a breakthrough of substantial dimension when first unveiled.” *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138 (Fed. Cir. 1985).

The claims of the ‘835 Patent cover Nuhn’s breakthrough innovation and must be upheld. In issuing the Challenged Claims, the USPTO recognized the problems solved by Nuhn’s invention, as well as the difference between general purpose amphibious vehicles designed for carrying people and tools across lakes and streams versus a special purpose vehicle invented to chew through and agitate *agriculture manure lagoons that are highly corrosive and often covered in a thick crust of semi-dried manure, bedding material (e.g., straw), and growing*

vegetation.⁸² As the Board considers the prior art against the Challenged Claims, it must resist the urge to issue a final written decision based on hindsight when Nuhn’s invention created an entirely new class of manure lagoon agitation equipment, which now leads the market.

In *Intri-Plex Technologies, Inc. v. Saint-Gobain Performance Plastics Rencol Ltd.*, IPR2014-00309, the Board upheld the validity of claims after finding that the patent owner’s evidence of secondary considerations outweighed the other three *Deere* factors supporting the petitioner’s combinations. Notwithstanding the simplistic nature of the invention and the fact that the prior art disclosed every claim element, the Board was persuaded by objective evidence of non-obviousness. *Id.* 35-47. Compelling evidence of non-obviousness requires the same result here.

i. Nuhn’s Invention Has Achieved Commercial Success

A patentee demonstrates commercial success by showing significant sales of the patented product in a relevant market. *J.T. Eaton & Co. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563 (Fed. Cir. 1997).

The claims of the ‘835 Patent cover Nuhn’s commercialized “Lagoon Crawler(s),” which achieved great commercial success. Shortly after its introduction, Nuhn’s Lagoon Crawlers overtook the market for manure lagoon

⁸² EX1041.

agitation “boats.” Nuhn’s Lagoon Crawlers were such a commercial success that they have essentially made traditional manure agitation boats obsolete.⁸³ Nuhn’s current generation of Lagoon Crawler, the Crawler X, practices the ‘835 Patent claims.⁸⁴ Nuhn has sold over [REDACTED] Crawler X Lagoon Crawlers since 2022, generating over \$ [REDACTED] in revenue.⁸⁵ This is a huge number of sales in just a few years considering the niche nature of this market.

At the time Nuhn launched its original Lagoon Crawler in 2014, Puck Custom Enterprises, Inc. (“Puck Enterprises”), the assignee of the Puck reference, had roughly 95% of the market share in North America for manure pumping boats.⁸⁶ With its Lagoon Crawlers, Nuhn quickly eclipsed Puck Enterprises as the market leader in manure pumping “boats” and has maintained its position at the top of the market ever since.

Nuhn’s Lagoon Crawler sales have single-handedly eclipsed annual sales of all traditional (i.e., non-amphibious) manure lagoon boats. Setting aside Bazooka’s infringing sales, Nuhn’s Lagoon Crawler held more than 90% of the market share for manure agitation “boats” in North America in 2023, whereas Puck Enterprises’ market share in 2023 is estimated at less than 10%.⁸⁷ The commercial success for

⁸³ EX2083, ¶27.

⁸⁴ EX2094, ¶¶300-326.

⁸⁵ EX2083, ¶25.

⁸⁶ EX2083, ¶27.

⁸⁷ EX2083, ¶27.

Nuhn's Lagoon Crawlers is strong evidence of non-obviousness. It also exemplifies that Nuhn's grab of the market share of agitation vehicles is a niche market.

There is also a direct nexus or link between the commercial success of Nuhn Crawler X Lagoon Crawler and the subject matter of the Challenged Claims.⁸⁸

ii. The Invention Satisfied A Long Felt Need

At the time of Nuhn's invention, a decades-old problem in agriculture farming was going unresolved and was, over time, getting worse as commercial livestock farms and manure lagoons grew larger and larger. The problem presented to agricultural farmers was the time-consuming job of *breaking up the crust formed on a manure lagoon and mixing / agitating the contents of the manure lagoon to achieve a homogeneous mixture prior to pump out and subsequent ground application as fertilizer*.⁸⁹

Although advancements were made to agitators/pumps, floating barges and manure agitations boats, breaking up thick crust and maneuverability through an agricultural manure lagoon still proved difficult in view of thick crust and/or sandbar formation.⁹⁰ The invention claimed in the '835 Patent solved this decades long problem that went unsolved, producing an amphibious, remotely operated and controlled, vehicle configured to crawl through an

⁸⁸ EX2046; EX2047; EX2094, ¶¶300-326.

⁸⁹ EX2094, ¶105.

⁹⁰ EX2029, ¶89.

agricultural manure lagoon, acting like an icebreaker that could chew through the solid crust of the lagoon, all while agitating / mixing the contents of a manure lagoon in an efficient and timely manner – the impact of which has been revolutionary within the livestock farming industry.

iii. Others Copied The Invention

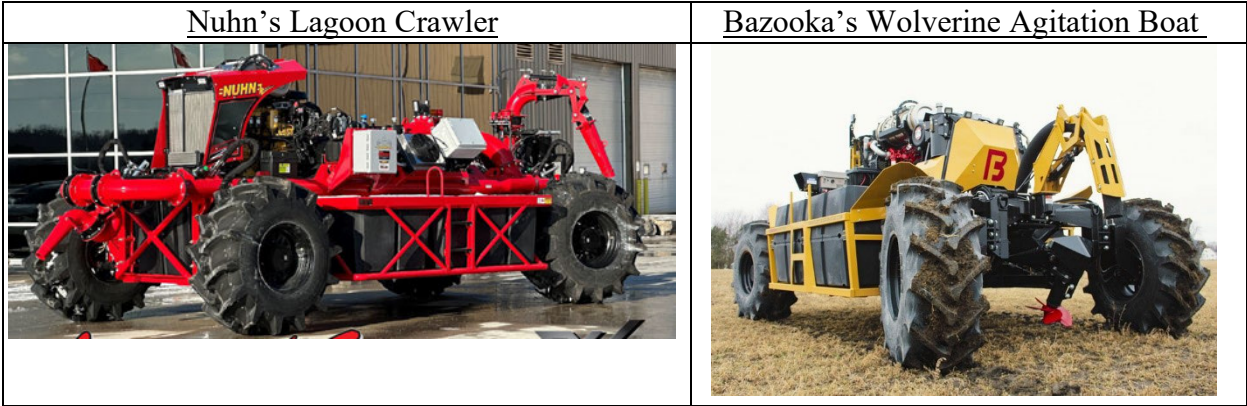
A party may prove copying by showing that an accused copier had access to the patented product combined with substantial similarity to the patented product. *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2010); *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1196 (Fed. Cir. 2003) (finding that evidence of a competitor responding to the introduction of the patent owner’s product with an infringing product indicated copying, which supported nonobviousness). Both elements of copying are present here.

Bazooka’s parent company Eldon C. Stutsman, Inc. (“Stutsman”) is a distributor and service center for Nuhn’s Lagoon Crawlers. Stutsman began buying Lagoon Crawlers from Nuhn in 2015 and has continued to purchase them ever since.⁹¹ During the development of Bazooka’s Wolverine, Stutsman even had one of their service mechanics works with Bazooka to provide advice on the design.⁹² This proves access.

⁹¹ EX2083, ¶¶69-70.

⁹² EX2083, ¶75.

The sheer similarity between Nuhn’s Lagoon Crawler and Bazooka’s Wolverine leaves little doubt that Bazooka copied Nuhn’s Lagoon Crawler as does Bazooka’s development history.



Bazooka has pursued patent protection for the Wolverine. Bazooka’s first provisional patent application disclosed a design that relied solely on propellers to agitate manure and did not include a pump and articulating nozzle/gun.⁹³ However, by the time Bazooka filed its non-provisional application, Bazooka’s design had evolved to one closely resembling Nuhn’s Lagoon Crawler and included both a pump and articulating nozzle/gun.⁹⁴ There is no doubt that the end result of this development process produced a manure lagoon agitation vehicle in the Wolverine that shares substantial similarity to Nuhn’s patented product.

⁹³ EX2048, 16-18; EX2094, ¶350.
⁹⁴ EX2049, 38; EX2050, 2; EX2094, ¶¶351-352.

iv. The Invention Achieved Unexpected Results

The claimed arrangement of elements produced a new and unexpected result that revolutionized the agricultural farming industry, including:

(1) The hydraulically powered ground engaging elements (i.e., wheels) not only carry the vehicle into and out of a manure lagoon, but also allow the vehicle to break-up (i.e., chew) through the thick crust on the top surface of the manure lagoon while the vehicle is floating; and

(2) The claimed arrangement results in a piece of manure agitation equipment that can do the work of four (4) PTO-driven tractor mounted manure agitation pumps (i.e., is four times more efficient than prior art agitators) due to the synergy provided by the hydraulically powered ground engaging elements, liquid manure pump, and nozzle(s).⁹⁵

The specific arrangement or combination of the elements recited in Claims 1, 17, and 39 of the '835 Patent produces these new and unexpected results. Change or arrange an element, however, and the new and unexpected results are lost.

When the claimed vehicle first enters a manure lagoon, the combination of the churning ground engaging elements (e.g., wheels) and the displacement of the floatable vehicle body disrupts the crust and creates a “pocket” or

⁹⁵ EX2083, ¶¶29-33; EX2094, ¶¶331-334.

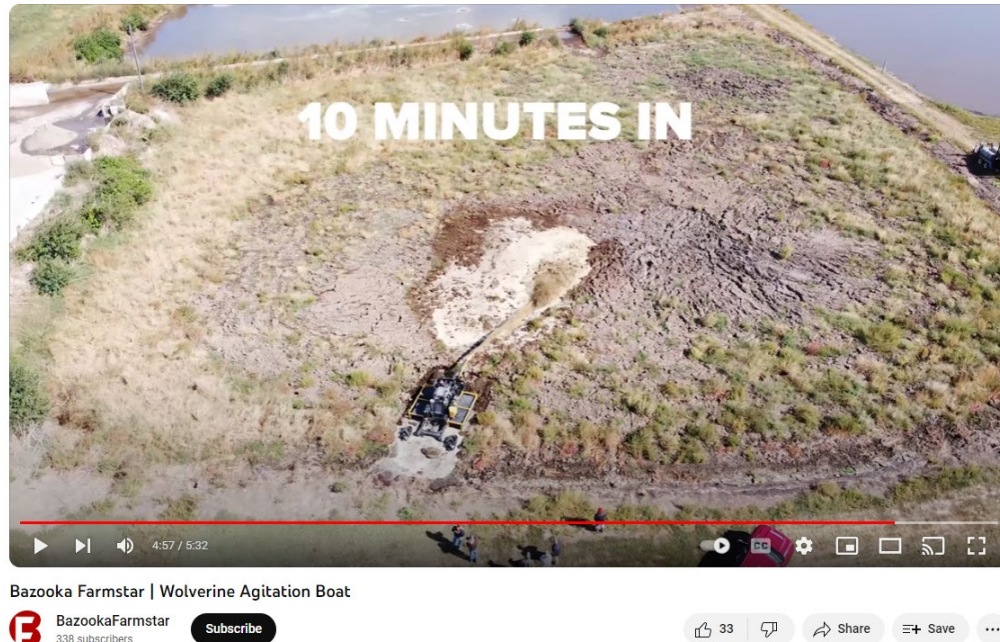
opening in the crust within which the vehicle can start to operate without clogging the liquid manure mover or liquid manure pump.⁹⁶ This “pocket” is shown in the screen shots below illustrating the vehicles manufactured by the Patent Owner and the Petitioner at work:



EX2006, 2.⁹⁷

⁹⁶ EX2083, ¶¶30-31; EX2094, ¶331.

⁹⁷ Video at <https://www.youtube.com/watch?v=fEgvvq9HZkk>



EX2007, 3.⁹⁸ While a POSITA might expect the addition of powered wheels would carry a manure agitation vehicle to and from a manure lagoon, the ability of the vehicle to “chew” a hole through the crust of poorly maintained manure lagoons and start a “working zone” for the liquid manure pump to operate in is a new and unexpected result provided by the combination of the churning wheels and displacement of the crust caused by the floating vehicle body.⁹⁹ This new capability allows the claimed invention to agitate manure lagoons that remained inaccessible/unserviceable to traditional manure agitation boats like the one disclosed in Puck.

⁹⁸ Video at <https://www.youtube.com/watch?v=3y3bSJJUOps>

⁹⁹ EX2094, ¶332.

Relatedly, the ability of the ground engaging elements to chew through the crust / sludge of a manure lagoon resulted in surprising efficiency gains. Ian Nuhn, the inventor of the '835 Patent, anticipated his Lagoon Crawler to have the same agitation performance as one tractor-mounted manure agitation pump of comparable horsepower and flowrate. It turned out that the synergistic effects of the claimed elements working together as claimed gave the Lagoon Crawler superior agitation performance to four (4) tractor-mounted manure agitation pumps.¹⁰⁰ In other words, the Lagoon Crawler is four times more efficient than prior art agitators due to the synergy provided by the hydraulically powered ground engaging elements, liquid manure pump, and nozzle(s). That means farmers and commercial manure applicators can realize considerable fuel savings by running a single Lagoon Crawler compared to running multiple tractor-mounted manure agitation pumps at the same time or running a single tractor-mounted manure agitation pump in a number of different locations around the perimeter of a manure lagoon over a much longer period of time. The inventor did not expect these exponential efficiency gains when he conceived of the invention and first reduced it to practice.

There is a long line of cases upholding the patentability of inventions comprising combinations of known elements to produce a new machine and new

¹⁰⁰ EX2083, ¶33.

results. For example, Nuhn's invention draws strong parallels to the inventions whose validity was upheld in *Blaw-Knox Co. v. I. D. Lain Co.*, 230 F.2d 373 (7th Cir. 1956) (patent declared valid on a concrete highway mechanism even though it consisted of known elements because the patentee had achieved the new result of eradication of the honeycomb defects previously encountered in using heavy concrete) and *Higley v. Brenner*, 128 U.S. App. D.C. 290, 387 F.2d 855, 858 (1967) (patent on a tractor-drawn subsoil tiller was granted over USPTO's rejection even though it consisted of known elements because the oscillating groundworking implement not only penetrated the soil, but provided the new result of simultaneously shattering both the subsoil and hardpan (a hard subsurface that forms six to eight inches beneath the soil's surface)).

v. Praise By Others

Nuhn's patented Lagoon Crawlers have been extensively praised for innovation in printed publications and have received industry awards.¹⁰¹ By way of example and without limitation, Nuhn has collected and attached 18 different articles lauding Nuhn's Lagoon Crawlers as a breakthrough product in the industry.¹⁰² Nuhn's patented Lagoon Crawler was even featured in a broadcast

¹⁰¹ EX2083, ¶¶34-52.

¹⁰² [EX2061] – [EX2074], [EX2080].

television segment that aired on the Discovery Channel on September 3, 2015

during “Extreme Machine Week.”¹⁰³

vi. Others Have Sought To License Nuhn’s Patents For The Lagoon Crawler

The success of Nuhn’s patented Lagoon Crawler was so substantial that the

[REDACTED]

reached out to Nuhn and sought a license to Nuhn’s Lagoon Crawler patents.¹⁰⁴

This is extremely persuasive evidence of non-obviousness, [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].

vii. The Industry Expressed Skepticism And Surprise At The Making Of The Invention (i.e., Nuhn Proceeded Contrary to Accepted Wisdom)

Although Nuhn’s Lagoon Crawler has been well received and is proven to work extremely well in corrosive manure lagoon environments, it went against conventional wisdom at the time it was introduced. When the Lagoon Crawler was first introduced in 2013-2014, a number of industry experts expressed skepticism that the Lagoon Crawler would successfully and reliability function as a manure

¹⁰³ EX2083, ¶¶48-50.

¹⁰⁴ EX2083, ¶¶64-67.

lagoon agitation vehicle over concerns that: the Lagoon Crawler's ground engaging structure (the hydraulically driven wheels) would get stuck and impede retrieval of the Crawler from a lagoon, the hydraulic system would leak hydraulic fluid into and contaminate a manure lagoon, the hydraulic system would fill with liquid manure rendering it inoperable, the hydraulic system fittings and/or electrical connections would corrode when continuously submersed in the corrosive manure, that the Lagoon Crawler would operate uncontrollably in the manure lagoon due to the agitation power / thrust generated by the pump absent a tether to an anchor at the bottom of the lagoon or tied off on land), and that the pump would clog or be ineffective when located on the bottom of the Lagoon Crawler as opposed to being closer to the bottom of the lagoon to suck out settled solids.¹⁰⁵ These concerns were huge question marks when the invention was first conceived and reduced to practice.

viii. Nexus Between Objective Evidence of Non-Obviousness and the Subject Matter of the Claims

The claims of the '835 Patent cover Nuhn's overall manure lagoon agitation vehicle, embodied in the Crawler X model, which is a unique combination and arrangement of components that work together in synergy to form the claimed invention as a whole.¹⁰⁶ As a result, there is a causal nexus between the claims as a

¹⁰⁵ EX2083, ¶¶53-60.

¹⁰⁶ EX2094, ¶¶300-326.

whole and secondary considerations evidence regarding of Nuhn’s overall manure lagoon agitation vehicle. In other words, because the claims recite a unique combination and arrangement of components that work in together in synergy to form the claimed invention as a whole, the causal nexus is to Nuhn’s overall vehicle as opposed to a novel component part or feature. This rule of law is clearly laid out by the Federal Circuit in *Medtronic, Inc. v. Teleflex Innovations S.A.R.L.*, 70 F.4th 1331, 1338 (Fed. Cir. 2023) (“The Board acknowledged Medtronic showed every element of the Side Opening Claims was individually known in the prior art but correctly concluded this did not preclude nexus where the evidence was ‘tied to the combination of features as a whole’ and the combination was not previously known”).

**VIII. GROUND 2: CLAIMS 1-5, 7-21, AND 23-40 ARE NOT OBVIOUS
BASED ON TRUXOR IN VIEW OF YOON OR CARRIER**

A. The Pumps Disclosed in Carrier, Truxor and Yoon

The dredge pump described in Truxor does not meet the “liquid manure mover” or “liquid manure pump” limitations of the Challenged Claims. There is no evidence in the record that the dredge pump disclosed in Truxor is a “liquid manure pump” (i.e., a “pump that pumps liquid manure” or a “pump with a structure that is capable of pumping liquid manure with suspended solids”). There is no evidence that the pump in Truxor was designed to pump liquid manure, has

ever been described or marketed as a liquid manure pump, or has been tested and validated (i.e., proven) for liquid manure pumping applications.¹⁰⁷

The Institution Decision provided in pertinent part that “[a]t this stage of the proceeding, we credit Dr. Winkel’s declaration testimony that ‘[d]redge systems were known in the art for pumping higher solid concentration manure.’”¹⁰⁸ This statement, however, directly contradicts or must be distinguished from Bazooka’s public statements that in liquid manure environments that contain “even . . . the thickest sludge where most pumps cannot operate.”¹⁰⁹ Bazooka’s arguments also rely on the false premise that any pump used for dredging could also pump liquid manure with suspended solids. That is not the case. Unlike lake or pond water, liquid manure acts as a non-Newtonian fluid when pumped.¹¹⁰ Simply because some heavy-duty dredging equipment has been used successfully to dredge manure lagoons (as discussed in EX1052, EX1070, EX1071) does not mean that all dredging pumps are capable of pumping liquid manure. The dredging equipment shown in the manure management handbooks and articles cited by Petitioner (e.g., EX1052, EX1070, EX1071) are monsters (i.e., large, heavy-duty dredge boats with large engines and pumps).¹¹¹ They are nothing like the light-duty (i.e.,

¹⁰⁷ EX2094, ¶162.

¹⁰⁸ Paper 12, 32.

¹⁰⁹ EX2033, 9.

¹¹⁰ EX2094, ¶¶115-116; EX2097, 2.

¹¹¹ EX2094, ¶162.

comparatively small engines and pumps) vehicle (described as a low ground pressure vehicle) and Doro pump (described as handling light sediments) in Truxor.¹¹² Petitioner does not carry its burden of establishing that any of the pumps described in Carrier, Truxor and/or Yoon would work in manure lagoons, where even Bazooka publicly admits “most pumps cannot operate”.¹¹³

Truxor’s Doro pump is described as capable of pumping light sediments such as “volatile sand”, which may be suitable for dredging purposes in lakes and streams, but there is no evidence that the light duty dredging pump disclosed in Truxor is capable of pumping liquid manure contained in an agricultural manure lagoon.¹¹⁴ Pumping light sediments in lakes and ponds is not equivalent to use in animal manure lagoons because the nature of the solid and liquid materials in each is different.¹¹⁵ Unlike lakes and ponds, animal manure lagoons contain a floating crust of semi-dried manure and animal bedding material (such as straw), which is different in composition from light sediments that accumulate on a lake bottom.¹¹⁶ In addition, unlike water, manure acts as a non-Newtonian fluid when pumped.¹¹⁷ Petitioner fails to present evidence that the Doro pump described in Truxor is

¹¹² EX2094, ¶¶115.

¹¹³ EX2033, 9.

¹¹⁴ EX2094, ¶164 and 156-161.

¹¹⁵ EX2094, ¶162.

¹¹⁶ EX2094, ¶162.

¹¹⁷ EX2094, ¶¶115-116, 162; EX2097, 2.

comparable in size, performance, or capability as the pumps used on the dredging equipment described in the manure management handbooks and articles Bazooka cites. It simply does not follow that all dredging equipment would be capable of pumping liquid manure with suspended solids.¹¹⁸

The pumps of Carrier and Yoon each require a sludge filtering device or screen that allow “only light floating materials [to] pass”.¹¹⁹ In fact, Carrier suggest that its water pump is prone to clogging due to “debris” (i.e., solid particles), which necessitates the need for the screen because sediment from a lake or stream could clog its water pump.¹²⁰ Based on Bazooka’s own statements that “most pumps” fail in manure lagoon environments, it is illogical to conclude that the solids contained in liquid manure would not clog the pumps of Carrier or Yoon.

B. Independent Claims 1, 17, 39 and 40

i. Elements [1.3], [17.3], [39.3] and [40.3] – “liquid manure mover positioned within liquid manure when the vehicle is floating”

For the reasons discussed in Section IX(C)(i), Carrier does not disclose a “liquid manure mover positioned within liquid manure when the vehicle is floating.” Petitioner does not argue that Yoon discloses a “liquid manure mover

¹¹⁸ EX2094, ¶162.

¹¹⁹ Paper 12, 26; EX1011, ¶42; EX2094, ¶¶122-125, 128-129, and 156-162.

¹²⁰ EX1005, ¶ [0063].

positioned within liquid manure when the vehicle is floating” and in fact the water pump 131 in Yoon is located high and dry inside the vehicle body.¹²¹

Petitioner asserts that Truxor’s “Doro Pump system (including the dredging pump, conduit, and nozzle) performs the function of moving liquid manure and is therefore a liquid manure mover.”¹²² Petitioner, however, fails to identify a single suggestion, inference, or reference in Truxor to the “Doro Pump system” actually pumping liquid manure or otherwise operating in an agricultural manure lagoon. Contrary to Bazooka’s own public statements concerning “most pumps” being inoperable in agricultural lagoons, Truxor’s Doro Pump system is advertised as a pump that “pumps light sediment with minimum amount of water [and that] [l]ight and soft deposits can be sucked directly from the bottom”.¹²³ A POSITA would not understand the disclosed Doro Pump as being a pump that would pump or move liquid manure, let alone operate in an environment where “most pumps cannot operate.”¹²⁴

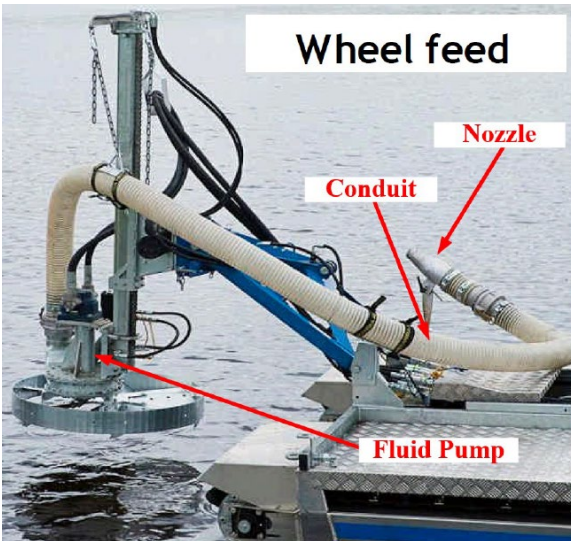
¹²¹ EX1011, 13 (illustrating water pump 131).

¹²² Paper 1, 57.

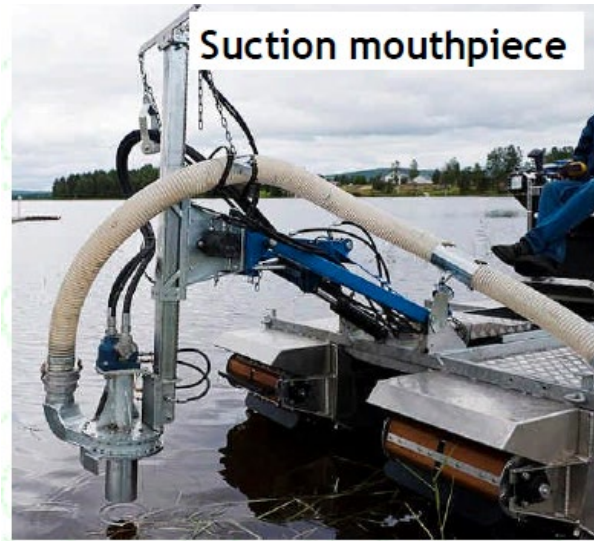
¹²³ EX1006, 11.

¹²⁴ EX2094, ¶¶161-168; EX2033, 9.

Petitioner further asserts that “the fluid pump [of Truxor] is submerged while the vehicle is floating. . . .”¹²⁵ However, as shown in the two images below, Truxor’s fluid pump may be raised out of the water when the vehicle is floating:¹²⁶



Paper 1, 56.



EX1006, 10.

The above photographs show the Truxor vehicle floating with the pump positioned out of (i.e., raised above) the water. Thus, in this position, Truxor’s pump is not “positioned within liquid manure when the vehicle is floating,” as required by the Challenged Claims. While a POSITA would understand that the quick-connect pump of Truxor may be submerged in a waterway (not in liquid manure) by lowering the boom arm, the language of the ‘835 Patent claims requires an

¹²⁵ Paper 1, 57.

¹²⁶ Paper 1, 56 and 57.

arrangement where the liquid manure mover is “positioned within liquid manure when the vehicle is floating.”¹²⁷ Again, nowhere in Truxor is there a disclosure of the Truxor vehicle floating in liquid manure, pumping liquid manure, etc., accordingly, a POSITA would not understand Truxor as disclosing a pump “positioned within liquid manure when the vehicle is floating.”¹²⁸ Furthermore, Truxor’s placement of the pump on the end of a boom arm does not result in an arrangement where the pump is always submerged when the vehicle is floating. The claim language is absolute in its requirement of a “liquid manure mover positioned within liquid manure when the vehicle is floating.” The claim language does not say that the liquid manure mover “may be positioned,” is “sometimes positioned,” is “configured to be positioned,” or is “positionable” within liquid manure when the vehicle is floating. Instead, the claim language requires the liquid manure mover to be positioned on the vehicle such that it is necessarily positioned within liquid manure (i.e., is always submersed) when the vehicle is floating. Stated differently, this limitation requires the liquid manure mover to be mounted in a location that is always below the “waterline” of the vehicle when the vehicle is floating. Truxor does not disclose such an arrangement.

¹²⁷ EX2094, ¶167.

¹²⁸ EX2094, ¶167.

ii. Elements [1.5], [17.5], [39.5] and [40.5] “a wireless remote control configured to. . . control a flow of liquid manure from. . .the liquid manure mover/liquid manure pump”

For the reasons discussed herein in Section IX(C)(ii), Carrier does not disclose “a wireless remote control configured to. . .control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump”, and Petitioner does not argue that Truxor discloses wireless remote control. Petitioner relies on Yoon as disclosing “a wireless remote control configured to. . .control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump.”¹²⁹ However, a POSITA would not understand Yoon for disclosing “a wireless remote control configured to. . .control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump”.¹³⁰

Yoon discloses a water pump protected by a “sludge filtering device” for use in water treatment.¹³¹ A POSITA would understand from Yoon that its water pump would clog if used to pump liquid manure, which is also consistent with Bazooka’s public statements that “most pumps cannot operate” in manure lagoons.¹³² A POSITA would also understand from Yoon that a pump requiring a “sludge filtering device” is not a pump that is capable of pumping liquid manure with

¹²⁹ Paper 1, 58.

¹³⁰ EX2094, ¶ 133.

¹³¹ EX1011 at ¶ [0029].

¹³² EX2094, ¶133.

suspended solids since the “sludge filtering device” is designed to remove suspended solids before they reach the pump.¹³³ Accordingly, a POSITA would not understand Yoon as disclosing a “liquid manure mover/liquid manure pump” that could be used to agitate the contents of a manure lagoon.¹³⁴

C. Dependent Claims 2-5, 7-16, 18-21, and 23-38

Claims 2-5 and 7-16 depend from Claim 1. Truxor in combination with Yoon/Carrier does not render any of these dependent claims obvious for at least the same reasons described above with respect to Claim 1. Claims 18-21 and 23-38 depend from Claim 17. Truxor in combination with Yoon/Carrier does not render any of these dependent claims obvious for at least the same reasons described above with respect to Claim 17.

D. The Truxor Combination Fails to Disclose The Claimed Combination of Elements, Which When Considered Collectively, Define an Amphibious Manure Lagoon Agitation Vehicle

The Patent Owner has not claimed a general-purpose amphibious vehicle with various tool attachments like in Truxor. The Challenged Claims, when considered as a whole, define an amphibious vehicle that is specially adapted for the particular purpose of disrupting the crust and recirculating liquid manure in a manure lagoon (via a “liquid manure mover”), where the vehicle can drive into, out

¹³³ EX2094, ¶133.

¹³⁴ EX2094, ¶133.

of, and navigate the manure lagoon by wireless remote control. This is not some post-allowance formulation of the invention, but is precisely what is described in the ‘835 Patent specification and what a POSITA would understand in view of the claim language requiring a “liquid manure mover” / a “liquid manure pump.”¹³⁵

The Truxor Combination does not reasonable show an amphibious vehicle that can be mobile on both land and liquid manure with structures capable of pumping liquid manure to agitate / recirculate the contents of a manure lagoon.

Truxor’s marketing brochure does not reasonably convey to a POSITA a vehicle that pumps manure.¹³⁶ On its face, the Truxor marketing brochure [EX1006] describes a manned amphibious vehicle for weed removal and dredging. Absent impermissible hindsight, a strict combination of Truxor with Yoon or Carrier would result in a remote-controlled amphibious weed clearing and dredging vehicle – not a remote-controlled amphibious manure lagoon agitation vehicle.¹³⁷ This is not just a difference in the intended application, but a different collection and arrangement of components and systems that perform a different function.

¹³⁵ EX1001, 8:5-27; EX2094, ¶¶170-172.

¹³⁶ EX2094, ¶171.

¹³⁷ EX2094, ¶171.

E. Petitioner Has Failed To Carry Its Burden of Demonstrating That a POSITA Would Have Had a Motivation to Combine Truxor And Yoon or Carrier With A Reasonable Expectation of Success

Petitioner fails to demonstrate that a POSITA would have had a motivation to combine Truxor and Yoon or Carrier with a reasonable expectation of success. The amphibious vehicle disclosed in Truxor and its tool attachments are designed to be operated by an onboard operator. Truxor therefore fails to teach the four enumerated wireless remote-control limitations of independent claims 1, 17, 39, and 40. Petitioner asserts that a POSITA would **add** wireless remote-control functionality to the amphibious vehicle disclosed in Truxor in view of the remote-control teachings of Yoon or Carrier because a fourth reference, Melnikov [EX1023], “describes adding remote control to Truxor-like amphibious sludge-pumping vehicles.”¹³⁸ But Melnikov does not suggest adding remote control to Truxor. Instead of doing that, Melnikov designed a radically different remote-controlled vehicle with a dual-screw propulsion system that looks nothing like Truxor. The reason for this is clear - controlling the positioning and operation of a dredge pump on the end of a boom arm by wireless remote control would be problematic given the complexity of the controls and difficulty observing its operation from a remote location.¹³⁹

¹³⁸ Petition, 54.

¹³⁹ EX2094, ¶¶174-182.

Truxor’s design places a priority on visual observation of its attachments, given the elevated operator’s seat and Truxor’s manual controls do not lend themselves to conversion to wireless remote control.¹⁴⁰ Furthermore, Truxor’s operator’s manual warns of a known “tilting risk.”¹⁴¹ Petitioner’s expert even acknowledges that the vehicle disclosed in Truxor has a tilting (i.e., rollover) risk:

Potential Rollover Risk EX1006, 5; <i>see also</i> EX1020-EX1021, 1; EX1022, 8.	Cold Weather/Hypothermia EX1006, 5.
	

EX1004, ¶249. This tilting risk would dissuade a POSITA from adding remote-control functionality to Truxor because remote-control is less precise and is much more difficult for the operator to perceive tipping and counter-steer.¹⁴² Petitioner has not demonstrated how a POSITA could overcome these difficulties when

¹⁴⁰ EX2094, ¶181.
¹⁴¹ EX1007, 128.
¹⁴² EX2094, ¶¶183-185.

making this combination, or that the resulting combination would actually work in the manure lagoon environment. Even today, some ten years later, there is no evidence that a remote-control option has been added to the Truxor vehicle.¹⁴³

**IX. GROUND 3: CLAIMS 1-5, 7-21, AND 23-40 ARE NOT OBVIOUS
BASED ON SENWATEC IN VIEW OF YOON OR CARRIER**

A. The Pumps Disclosed in SenwaTec, Carrier and Yoon

The dredge pump described in SenwaTec does not meet the “liquid manure mover” or “liquid manure pump” limitations of the Challenged Claims. There is no evidence in the record that would lead a POSITA to conclude that the dredge pump disclosed in SenwaTec is a “liquid manure pump” (i.e., a “pump that pumps liquid manure” or a “pump with a structure that is capable of pumping liquid manure with suspended solids”). There is no evidence that the dredge pump in SenwaTec was designed to pump liquid manure, has ever been described or marketed as a liquid manure pump, or has been tested and validated (i.e., proven) for liquid manure pumping applications.

SenwaTec discloses a centrifugal pump.¹⁴⁴ But most centrifugal pumps are incapable of pumping liquid manure, as explained in Houle: “[T]he mixing capabilities of a centrifugal pump system are at best limited and time consuming, and no agitation takes place during transfer of the slurry to a different contained

¹⁴³ EX2094, ¶¶177-179.

¹⁴⁴ EX2012, 3.

into a tank spreader. Furthermore, clogging of the pump's impeller and consequential loss of pump efficiency remains a serious shortcoming.”¹⁴⁵

Accordingly, a POSITA would not automatically consider SenwaTec's pump to be a liquid manure pump or a liquid manure mover simply because it is described as a centrifugal dredging pump.¹⁴⁶

As discussed at Section XI(A), a POSITA would also not understand the pumps of Yoon or Carrier to pump or move liquid manure.

B. Independent Claims 1, 17, 39 and 40

i. Elements [1.3], [17.3], [39.3] and [40.3] – “liquid manure mover positioned within liquid manure when the vehicle is floating”

For the reasons discussed in Section IXI(i), Carrier does not disclose a “liquid manure mover positioned within liquid manure when the vehicle is floating”. Petitioner does not argue that Yoon discloses a “liquid manure mover positioned within liquid manure when the vehicle is floating” and in fact the water pump 131 in Yoon is located high and dry inside the vehicle body.¹⁴⁷

Petitioner asserts that “SenwaTec's dredging pump would have necessarily pumped liquid manure.”¹⁴⁸ Petitioner's statements are made in view of certain

¹⁴⁵ EX2010, 1:24-63.

¹⁴⁶ EX2029, ¶199.

¹⁴⁷ EX1011, 13 (illustrating water pump 131).

¹⁴⁸ Paper 1, 71.

purported evidence (e.g., EX1012, 31 EX1026, 2; and EX1027, 3) that is directly contradicted by Petitioner’s own public statements concerning “most pumps” being inoperable in agricultural lagoons.¹⁴⁹ This evidence shows the SenwaTec vehicle being used in a municipal wastewater pond – not a manure lagoon.¹⁵⁰ Unlike manure lagoons, municipal wastewater ponds do not contain animal bedding material (such straw) and therefore do not have the same types of solids or crust formation problems present in manure lagoons.¹⁵¹ In addition, unlike water, manure acts as a non-Newtonian fluid when pumped.¹⁵² Petitioner further asserts that “the pump [of SenwaTec] is submerged while the vehicle is floating. . . .”¹⁵³, but like Truxor, SenwaTec’s pump is attached to the end of a boom-arm and therefore can be raised above the waterline when the SenwaTec vehicle is floating:



EX1012, 1.



EX1013, 17.

¹⁴⁹ EX2033, 9.

¹⁵⁰ EX2094, ¶¶195, 216.

¹⁵¹ EX2094, ¶195.

¹⁵² EX2094, ¶¶115-116; EX2097, 2.

¹⁵³ Paper 1, 71.

The above photographs show the SenwaTec vehicle floating with the dredge pump positioned out of (i.e., raised above) the water. While a POSITA would understand that SenwaTec’s dredge pump may be submerged in a waterway (not in liquid manure) by lowering the boom arm, the language of the ‘835 Patent claims requires an arrangement where the liquid manure mover is “positioned within liquid manure when the vehicle is floating.”¹⁵⁴ SenwaTec’s placement of the pump on the end of a boom arm does not result in an arrangement where the pump is always submerged when the vehicle is floating. As explained above, the claim language is absolute in its requirement of a “liquid manure mover positioned within liquid manure when the vehicle is floating.” SenwaTec does not disclose such an arrangement.

ii. Elements [1.5], [17.5], [39.5] and [40.5] “a wireless remote control configured to. . . control a flow of liquid manure from. . .the liquid manure mover/liquid manure pump”

For the reasons discussed in Section IX(C)(ii), Carrier does not disclose “a wireless remote control configured to. . .control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump” and Petitioner does not argue that SenwaTec discloses wireless remote control.¹⁵⁵ Petitioner relies on Yoon as

¹⁵⁴ EX2094, ¶198.

¹⁵⁵ Paper 1, 58.

disclosing “a wireless remote control configured to . . . control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump”.¹⁵⁶ But for the reasons discussed in Section XI(B)(ii), Yoon does not disclose “a wireless remote control configured to . . . control a flow of liquid manure from . . . the liquid manure mover/liquid manure pump.”

C. Dependent Claims 2-5, 7-16, 18-21, and 23-38

Claims 2-5, and 7-16 depend from Claim 1. SenwaTec in combination with Yoon/Carrier does not render any of these dependent claims obvious for at least the same reasons described above with respect to Claim 1. Claims 18-21 and 23-38 depend from Claim 17. SenwaTec in combination with Yoon/Carrier does not render any of these dependent claims obvious for at least the same reasons described above with respect to Claim 17.

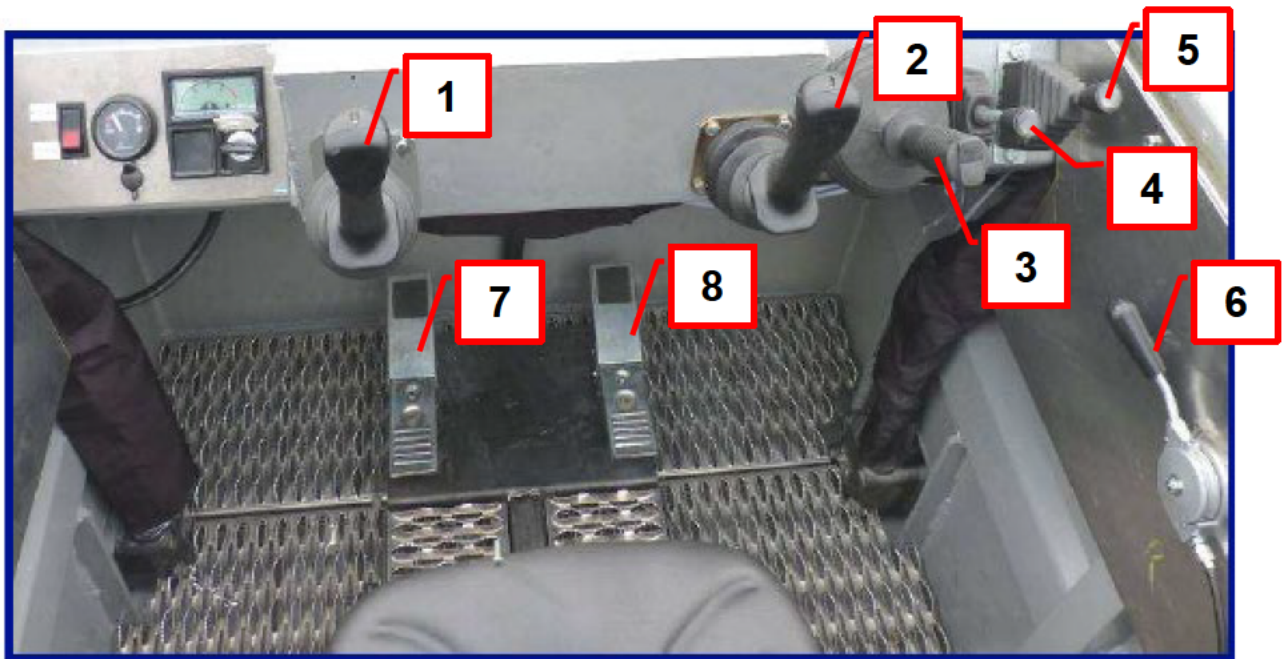
D. Petitioner Has Failed To Carry Its Burden of Demonstrating That a POSITA Would Have Had a Motivation to Combine SenwaTec And Yoon or Carrier With a Reasonable Expectation of Success

Petitioner fails to demonstrate that a POSITA would have had a motivation to combine SenwaTec and Yoon or Carrier with a reasonable expectation of success. Like Truxor, the amphibious vehicle disclosed in SenwaTec and its tool attachments are designed to be operated by an on-board operator. SenwaTec

¹⁵⁶ Paper 1, 58.

therefore fails to teach the four enumerated wireless remote-control limitations of independent claims 1, 17, 39, and 40. In Ground 3, Petitioner asserts that a POSITA would **add** wireless remote-control functionality to the amphibious vehicle disclosed in SenwaTec in view of the remote-control teachings of Yoon or Carrier.¹⁵⁷ But, as explained above in connection with the Truxor Combination, if it were easy to add remote-control to a vehicle like SenwaTec, it would have been done, but even today, some ten years later, there is no evidence that a remote-control option has been added to the SenwaTec vehicle.¹⁵⁸

The vehicle disclosed in SenwaTec has at least 8 different control interfaces – 5 separate joysticks, 2 foot pedals, and 1 hand-lever:



¹⁵⁷ Paper 1, 73-74.

¹⁵⁸ EX2094, ¶¶209-211.

EX1012, 1. Petitioner has not carried its burden of showing that a POSITA would have had a reasonable expectation that all these controls, which must be operated by both hands and both feet, could successfully be carried over to wireless remote-control without significant effort and adaptation.¹⁵⁹ This is fatal in view of the backdrop that the difficulties with converting manual excavator-like controls is known in the art.¹⁶⁰

Petitioner also fails to carry its burden of showing that a POSITA could reasonably expect success in operating the SenwaTec vehicle from a remote location where the positioning and operation of the submerged pump would be difficult to observe. The photographs in SenwaTec's marketing brochure suggest to a POSITA that remote-control of SenwaTec's pumping functionality from a distance would be a **major problem** given that the operators in the photographs are STANDING UP to get a better view of the submerged pump even though the operator's seat can't be more than 10 feet from the pump:

¹⁵⁹ EX2094, ¶¶206-209.

¹⁶⁰ EX2025; EX2028; EX2094, ¶208.



EX1012, 2. This reinforces what a POSITA would readily appreciate – it would be difficult if not impossible to control and operate this type of vehicle and pump (i.e., those disclosed in SenwaTec or Truxor) from a remote location.¹⁶¹

X. GROUND 4: CLAIMS 1-40 ARE NOT OBVIOUS BASED ON PUCK IN VIEW OF BRYHAM

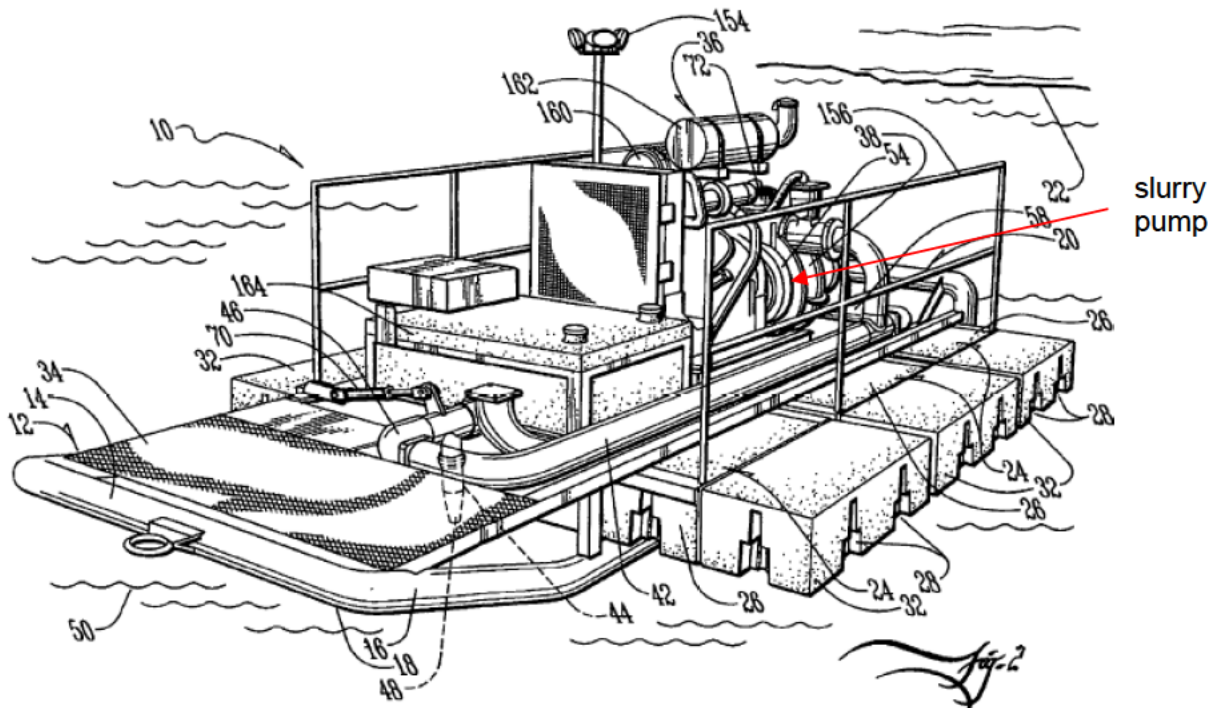
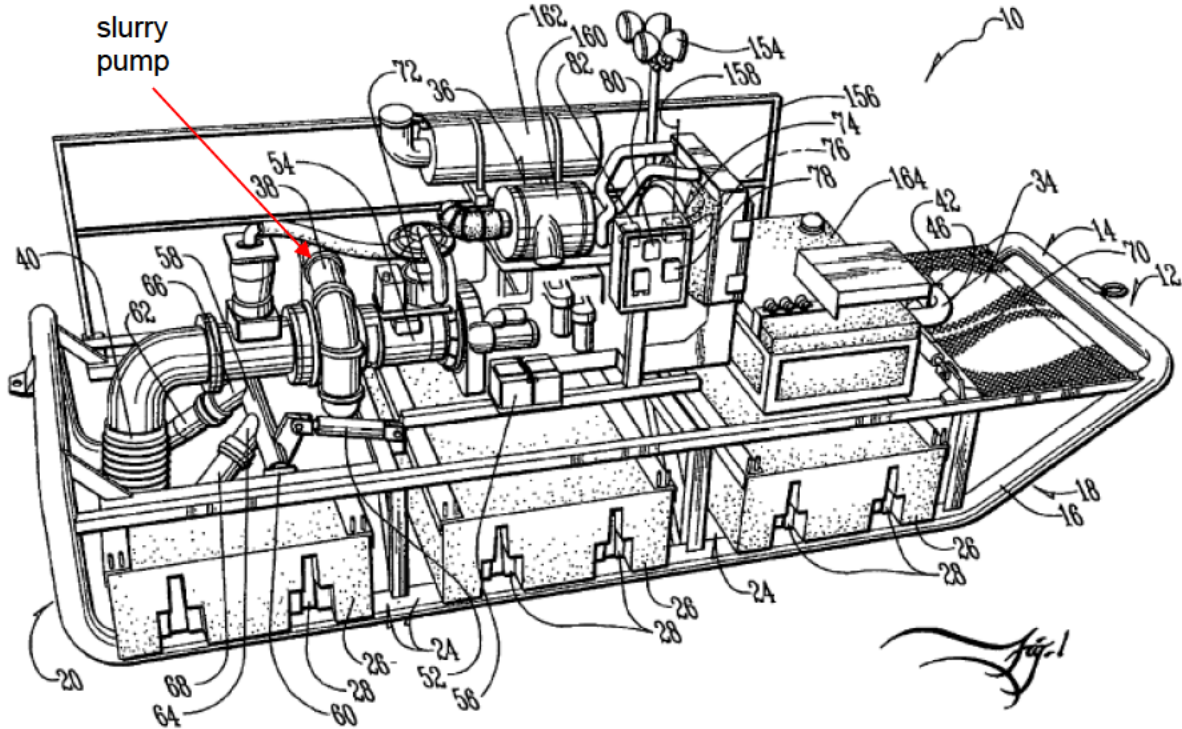
A. Independent Claims 1, 17, 39 and 40

- i. Elements [1.3], [17.3], [39.3] and [40.3] – “a hydraulically powered liquid manure mover positioned within liquid manure when the vehicle is floating”**

Puck discloses a slurry pump 38 that is mounted high and dry in the vessel hull. Puck’s pump 38 is not “positioned within liquid manure when the vehicle is floating” as required by the ‘835 Patent claims:¹⁶²

¹⁶¹ EX2094, ¶¶222, 384.

¹⁶² EX1014, 2-3.



Under no circumstances would the slurry pump 38 be “positioned within liquid manure when the vehicle is floating,” and a POSITA would never understand Puck

as disclosing the same, expressly or inherently.¹⁶³ Nor is the slurry pump 38 disclosed in Puck an “immersible liquid manure pump” and therefore does not meet the corresponding structure that the ‘835 Patent specification discloses for the “liquid manure mover.”¹⁶⁴ Bryham does not cure this deficiency as it does not disclose a liquid manure pump at all, and Petitioner does not argue that Bryham discloses a liquid manure pump.¹⁶⁵ As a result, the Puck-Bryham Combination does not render Claim 1-40 unpatentable for this reason.

ii. Element [1.4], [17.4], [39.4] and [40.4] “the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover”

Puck and Bryham, individually and in combination, fail to disclose a “power source configured to provide power to **both** the ground engaging propulsion structure and the liquid manure mover” as required by the Challenged Claims. Petitioner’s sole basis for alleging that this element is met is its expert’s conclusory statement that a POSITA would be motivated to use Puck’s power source to also power the wheels being added from Bryham.¹⁶⁶ But Puck’s hydraulic pump 54 is designed to operate hydraulic (linear) actuators 52 and would not have the capability to drive ground engaging wheels, which would require high-volume

¹⁶³ EX2094, ¶223.

¹⁶⁴ EX2094, ¶223.

¹⁶⁵ Paper 1, 87.

¹⁶⁶ EX1004, ¶348.

continuous flow with throttling.¹⁶⁷ In particular, Puck discloses that “[t] hydraulic cylinder (52) is coupled to a hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56).”¹⁶⁸ A POSITA would immediately recognize that a hydraulic pump that is powered by a 12-volt battery, like the hydraulic pump 54 disclosed in Puck, would be insufficient to drive the hydraulically powered wheels of a vehicle.¹⁶⁹

iii. Elements [1.5], [17.5], [39.5] and [40.5] “a wireless remote control configured to. . . (1) control the ground engaging propulsion structure”

Petitioner argues that a “POSA would have been motivated to configure the remote-control steering system of Puck to control the speed and direction of the ground engagement means of Bryham while the vehicle is ground engaging.”¹⁷⁰ But Puck’s remote-control system is limited to turning the engine on and off, controlling engine speed, turning the nozzles on and off, and controlling nozzle direction.¹⁷¹ So the Petitioner is **not** arguing **simple plug-and-play substitution** here, but instead argues that a POSITA would modify the remote-control system in Puck to control Bryham’s steering and drive system. The problem with Petitioner’s theory is that substantial modifications to Puck’s remote-control

¹⁶⁷ EX2094, ¶226.

¹⁶⁸ EX1014, ¶27.

¹⁶⁹ EX2094, ¶226.

¹⁷⁰ Paper 1, 88; EX1004, ¶354,

¹⁷¹ EX1014, ¶¶32-33; EX2094, ¶227.

system would have to be made and there is no discussion in the references or even the Winkel Declaration as to how a POSITA could make those modifications to arrive at a successful combination. The Petition repeats Dr. Winkel’s general proposition that vehicles with wireless remote-control systems are generally known in the art, but just because the art teaches that *some* vehicles can be remote controlled does not mean that *all* vehicles can be remote controlled or that a POSITA would have had a reasonable expectation that Puck’s remote-control could be easily modified to control Bryham’s steering and drive system.¹⁷²

B. Independent Claims 39 and 40

Independent claims 39 and 40 require the amphibious vehicle to have a ground engaging propulsion structure “wherein each wheel is powered by its own variable speed hydraulic motor.” The manure agitation boat disclosed in Puck does not have its own set of wheels, much less powered wheels, so Petitioner attempts to rely upon Bryham as teaching this limitation. But each wheel of the amphibious vehicle described in Bryham is not powered by its own variable speed hydraulic motor.¹⁷³ Indeed, as shown below, the front wheel in Bryham (i.e., the

¹⁷² EX2094, ¶228.

¹⁷³ EX2094, ¶229.

one at the bow that swivels) is not powered at all and therefore is not powered by its own variable speed hydraulic motor:¹⁷⁴

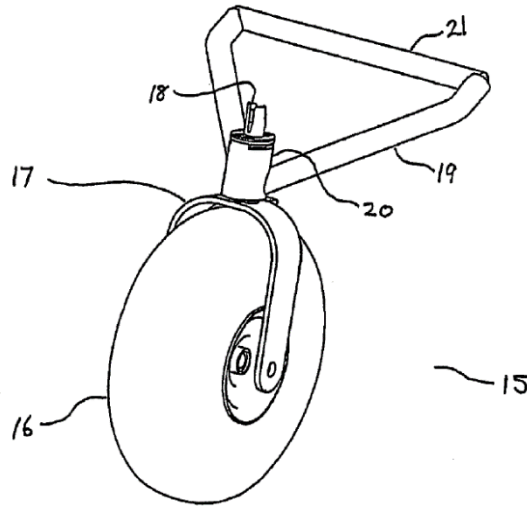


Figure 3A

As a result, the combination of Puck and Bryham fails to render Claims 39 and 40 obvious for this additional reason.

C. Dependent Claims 2-16 and 18-38

Claims 2-16 depend from Claim 1 and claims 18-38 depend from Claim 17. Puck in combination with Bryham does not render any of these dependent claims obvious for at least the same reasons described above.

¹⁷⁴ EX1015, p. 3.

**D. Petitioner Has Failed To Carry Its Burden of Demonstrating
That a POSITA Would Have Been Motivated to Combine
Puck and Bryham With a Reasonable Expectation of Success**

The manure agitation boat disclosed in Puck is designed to be launched and retrieved using a trailer.¹⁷⁵ Thus, Puck fails to teach the hydraulically powered “ground engaging propulsion structure” limitations of the Challenged Claims. Petitioner asserts that a POSITA would add Bryham’s wheels to the manure agitation boat disclosed in Puck.¹⁷⁶ But the Petition fails to demonstrate that a POSITA would have been motivated to make the Puck-Bryham Combination and would have had a reasonable expectation of success in achieving the claimed invention.

**i. Petitioner Has Not Presented Sufficient Evidence
Demonstrating That a POSITA Would Have Been
Motivated to Combine Puck and Bryham**

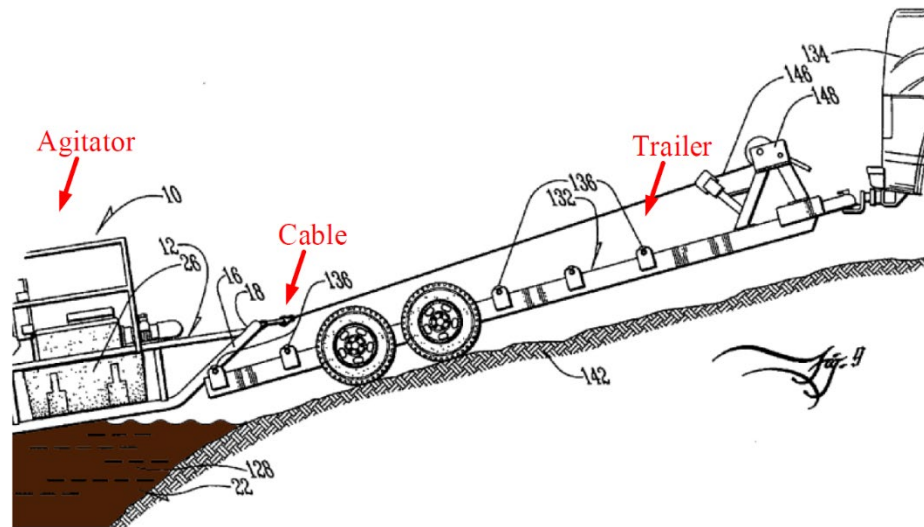
Petitioner incorrectly asserts that a POSITA would have been motivated to combine the teachings of Puck with the teachings of Bryham “to make transporting, launching, and retrieving the Puck boat easier, safer and without having to put the trailer (let alone one’s feet) in the corrosive manure lagoon.”¹⁷⁷ Neither of these reasons/flaws in Puck’s design are actually supported by Puck’s

¹⁷⁵ EX1014, 9-10; EX2094, ¶¶ 134-135.

¹⁷⁶ Paper 1, 83.

¹⁷⁷ Paper 1, 80; EX1004, ¶333.

disclosure.¹⁷⁸ As shown in the annotated image below from the Petition, Puck actually discloses a system where the manure agitation boat can be launched and retrieved **without backing the trailer** into the manure lagoon:¹⁷⁹



(*Id.*, FIG. 9 (annotated).)

A POSITA would therefore recognize that the process of launching and retrieving Puck's boat does not "require a user stepping in a lagoon" or "exposing a trailer (or vehicle) to highly corrosive environments" in a manure lagoon as Defendant incorrectly argues.¹⁸⁰ Indeed, neither the trailer nor the operator is shown entering the lagoon when Puck's boat is launched in the manure boat demonstration video

¹⁷⁸ EX2094, ¶ 235.

¹⁷⁹ Paper 1, 81.

¹⁸⁰ EX2094, ¶¶ 236-240.

published by Progressive Dairyman.¹⁸¹ In view of the foregoing, POSITA would not have seen any problem with Puck's design that needed fixing.¹⁸²

Furthermore, if a POSITA were concerned about "exposing a trailer (or vehicle) to highly corrosive environments" as Petitioner suggests, they certainly would not have looked to substitute Puck's trailer, which did not need to be submersed in a manure lagoon, for a ground engaging propulsion structure that would be submersed in a manure lagoon the entire time the manure agitation vehicle was operating in the lagoon.¹⁸³ In other words, if a POSITA were concerned that the "corrosive" environment of a manure lagoon might damage Puck's trailer and trailer wheels/bearings, that concern would lead them away from adding Bryham's wheels to Puck's manure lagoon agitation boat because the wheels, bearings, etc. of Bryham's ground engaging propulsion structure would be immersed and remain in the corrosive manure lagoon for the entire period of time during regular agitation sessions, which often take multiple hours.¹⁸⁴ Contrary to Petitioner's arguments, the purported Puck-Bryham Combination would not actually solve the alleged problem of equipment exposure to corrosive manure lagoon environments.¹⁸⁵

¹⁸¹ EX2094, ¶238.

¹⁸² EX2094, ¶239.

¹⁸³ EX2094, ¶240.

¹⁸⁴ EX2094, ¶240.

¹⁸⁵ EX2094, ¶241.

Finally, a POSITA would have recognized that adding hydraulically powered wheels to Puck's boat would not have solved the problem of retrieving the Puck boat easier and safer as Petitioner argues.¹⁸⁶ A POSITA would have understood that hydraulic systems for powering wheels are configured such that the wheels are locked and will not rotate when there is no hydraulic flow (i.e., when the hydraulic pump is not running).¹⁸⁷ This prevents the vehicle from rolling when it is powered off and therefore acts as a parking brake. However, this also means that if the vehicle breaks down or runs out of gas, the hydraulically powered wheels will not turn and impede retrieval from the manure lagoon.¹⁸⁸ In such a scenario, Nuhn's invention is more difficult to retrieve from a lagoon than Puck's boat.¹⁸⁹ This problem is one that POSITAs actually recognized and shared with the inventor when Nuhn's Lagoon Crawler was first introduced and it is a known drawback to the invention.¹⁹⁰ When one of Nuhn's Lagoon Crawlers breaks down or runs out of fuel in a manure lagoon, the extraction method is to have a person ride out to the stranded machine on another Lagoon Crawler and strap them together so that the working machine can pull the stranded machine out of the

¹⁸⁶ EX2094, ¶241.

¹⁸⁷ EX2094, ¶241.

¹⁸⁸ EX2094, ¶241.

¹⁸⁹ EX2094, ¶241.

¹⁹⁰ EX2083, ¶61

lagoon.¹⁹¹ This demonstrates that if a POSITA were trying to solve safety problems associated with retrieving Puck's boat, they would not have looked to add hydraulically powered wheels given that they lock when hydraulic fluid is not flowing and would impede the retrieval of non-running equipment.¹⁹²

ii. Petitioner Has Not Presented Sufficient Evidence Demonstrating That a POSITA Would Have Had a Reasonable Expectation of Success in Adding Bryham's Wheels to Puck

Petitioner has not carried its burden of demonstrating that a POSITA would have had a reasonable expectation of success in adding Bryham's wheels to the manure agitation boat disclosed in Puck to achieve the claimed invention. Bryham discloses a vee-hull boat with three wheels (one at the bow and two at the stern) that can retract and extend into and out of the boat hull.¹⁹³ Petitioner's expert readily acknowledges that manure lagoons – the environment in which Puck's vessel operates – often have steep and slippery embankments.¹⁹⁴ Given the characteristics of manure lagoons, a POSITA would not have expected the 3-wheel design disclosed in Bryham to provide Puck's vessel with the capability of traversing these steep and slippery embankments, when a POSITA would expect:

¹⁹¹ EX2083, ¶62.

¹⁹² EX2083, ¶63; EX2094, ¶241.

¹⁹³ EX1015, 2; EX2094, ¶244.

¹⁹⁴ EX1004, ¶336.

- Bryham’s 3-wheel design to be inherently unstable, i.e., prone to tipping if used on steep lagoon embankments.
- Bryham’s 3-wheel design, with only two powered wheels at the stern, to have poor traction if used in a manure lagoon and would likely get stuck.
- The one small steerable front wheel in Bryham to be prone to sliding in a manure lagoon and would be ineffective in turning the vehicle.¹⁹⁵

Thus, Petitioner has failed to demonstrate that a POSITA would reasonably expect that Puck’s vessel could successfully traverse the steep and slippery embankments when entering and exiting manure lagoons if Bryham’s wheels were added to Puck.

XI. GROUND 5: CLAIMS 1-40 ARE NOT OBVIOUS BASED ON PUCK IN VIEW OF BRYHAM AND BENNETT-II

In brining Ground 5, Petitioner concedes that Ground 4 fails because “the remote-control steering system of Puck would not have been obviously modified to control the Bryham wheels (*supra* Section XIV.B, [1.5]), [but in that event] Bennett-II teaches remote control of the ground engaging propulsion structure”.¹⁹⁶ Petitioner is not arguing in the alternative, but instead concedes it is likely that Board will find that the remote-control steering system of Puck would not have

¹⁹⁵ EX2094, ¶251.

¹⁹⁶ Paper 1, 102.

been obviously modified to control the Bryham wheels. The Board should dismiss Ground 4 for this admission alone.

A. Independent Claims 1, 17, 39, and 40

- i. Element [1.4], [17.4], [39.4] and [40.4] “power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover”**

Puck and Bryham and Bennett-II, individually and in combination, fail to disclose a “power source configured to provide power to **both** the ground engaging propulsion structure and the liquid manure mover” as required by the Challenged Claims. Petitioner relies on the same basis as it argues in Ground 4, which fails for the reason set forth above in Section XIII(A)(ii).

- ii. Elements [1.5], [17.5], [39.5] and [40.5] “a wireless remote control configured to. . . (1) Control The Ground Engaging Propulsion Structure”**

Bennett-II teaches an amphibious vehicle 10 with a pair of tracks 12, 14 that are driven by two drive wheels 590, 592 through a transmission 550 that is powered by a single engine 502:¹⁹⁷

¹⁹⁷ EX1017, 22.

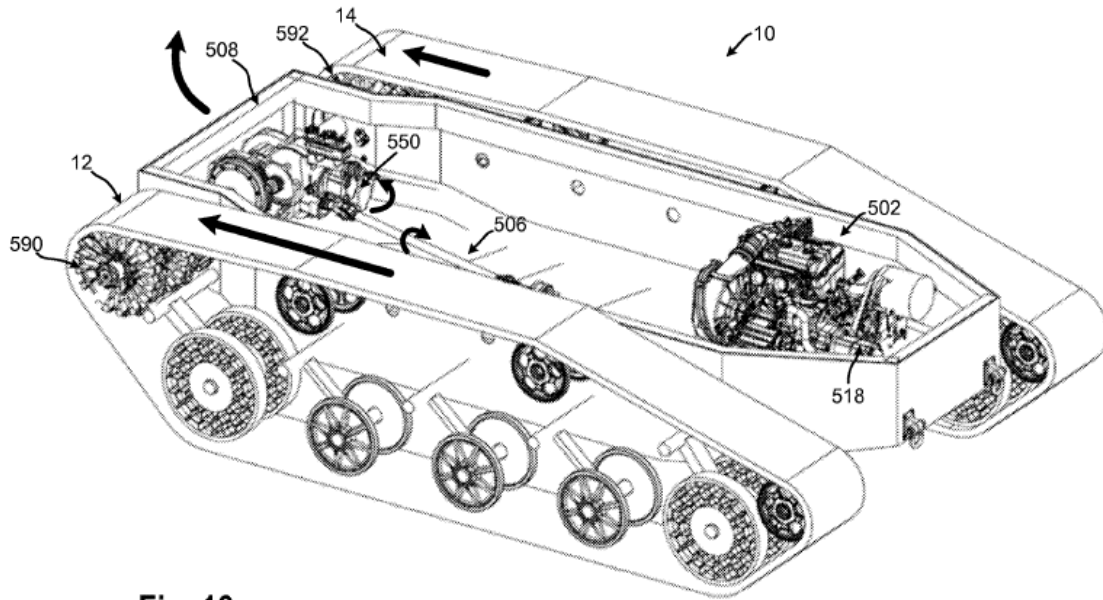


Fig. 16

The fact that Para. [0043] of Bennett-II provides the generalized statement that “vehicle 10 may be operated by remote control” tells a POSITA nothing about how one could modify Puck’s remote-control system to control Bryham’s 3-wheeled ground engagement system, which is quite different from Bennett’s drivetrain.¹⁹⁸ Nor has Petitioner provided evidence on this point.

B. Dependent Claims 2-16 and 18-38

Claims 2-16 depend from Claim 1 and Claims 18-38 depend from Claim 17. The combination of Puck with Bryham and Bennett-II does not render any of these dependent claims obvious for at least the same reasons described under Ground 4.

¹⁹⁸ EX2094, ¶267.

XII. CONCLUSION

Petitioner has not established a reasonable likelihood that any of the
Challenged Claims will be found unpatentable.

Dated: July 9, 2024

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CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that this brief complies with the type volume limitations of 37 C.F.R. § 42.24(b)(1). This brief contains 13,666 words as calculated by the “Word Count” feature of Microsoft Word for Microsoft 365 MSO, the word processing program used to create this brief.

The undersigned further certifies this brief complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and typestyle requirements of 37 C.F.R. § 42.6(a)(2)(iii). This brief has been prepared in a proportionally spaced typeface using Microsoft Word for Microsoft 365 MSO in Times New Roman 14-point font.

Dated: July 9, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. 42.6(e), I certify that on this 9th day of July, 2024,
a true and correct copy of the foregoing **Patent Owner's Response** was
served by electronic mail on Petitioner's lead and backup counsel at the
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