



BAZOOKA-FARMSTAR, LLC (PETITIONER)
v. NUHN INDUSTRIES LTD. (PATENT OWNER)

Case No. IPR2024-00004

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

PATENT OWNER'S IPR HEARING DEMONSTRATIVES

February 13, 2025



How are the '835 Patent Claims Different from the '425 Patent Claims?

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Claim 1 of the '425 Patent	Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
1. An amphibious vehicle comprising:	1. An amphibious vehicle comprising:	17. An amphibious vehicle comprising:	39. An amphibious vehicle comprising:	40. An amphibious vehicle comprising:
a floatable vehicle body;	a floatable vehicle body;	a floatable vehicle body;	a floatable vehicle body;	a floatable vehicle body;
ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;	a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;	a ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;	a ground engaging propulsion structure comprising a set of wheels and wherein each wheel is powered by its own variable speed hydraulic motor;	a ground engaging propulsion structure comprising a set of wheels and wherein each wheel is powered by its own variable speed hydraulic motor;
a fluid pump for pumping liquid manure;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

How are the '835 Patent Claims Different from the '425 Patent Claims? (continued)

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Claim 1 of the '425 Patent	Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the fluid pump; and,	a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,	a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,	a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,	a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the liquid manure mover; and,
a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and

EX2094, ¶37.

Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)
2. “liquid manure pump” (at least independent claims 1 and 39)

Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Expert’s Agree 112(f) Applies:

Petitioner’s Expert

74. The phrase “liquid manure mover” does not provide any structure corresponding to the manure moving function.

75. I understand that Section 112(f) applies to claim terms that recite function without reciting sufficient structure for performing that function. I also understand that a critical question in this inquiry is whether the claim term is used in common parlance or by persons of skill in the pertinent art to designate structure.

EX1004, ¶¶74-75.

Patent Owner’s Expert

69. In the ‘835 IPR Petition, Bazooka argued that the term “liquid manure mover” is a means-plus-function claim term that should be interpreted under 35 U.S.C. § 112(f) and that the corresponding structure disclosed in the specification is a “pump, conduit, and nozzle.” Petition, p. 34. I agree that the term “liquid manure mover” should be treated as a means-plus-function claim term, but disagree with Bazooka’s formulation of the structure that corresponds with this means-plus-function term because it is too generic. Indeed, the corresponding structure that

EX2094, ¶69.



Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Expert’s Disagree Over Corresponding Structure:

Petitioner’s Expert

80. The only structure disclosed in the ‘835 Patent that moves liquid manure, is hydraulically powered, submerged within the liquid manure, and is connected to a hydraulic cylinder with an adjustable angular orientation is the vehicle pumping system comprising the pump, conduits, and nozzle. Therefore, the means-plus-function term “liquid manure mover” corresponds to “a pump, a conduit, and a nozzle.”

EX1004, ¶80.

Patent Owner’s Expert

73. With respect to point (2), it is my opinion that a POSITA would consider the “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s)” as the corresponding structure. This formulation is different from Bazooka’s formulation in minor, but important ways. It is more consistent with and tracks the language of the claims themselves, which recite a “liquid manure pump” as opposed to simply any “pump” as Bazooka’s formulation appears to imply:

EX2094, ¶89.



Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

The ‘835 Patent describes an immersible liquid manure pump:

Petitioner’s Expert

80. The only structure disclosed in the ‘835 Patent that moves liquid manure, is hydraulically powered, submerged within the liquid manure, and is connected to a hydraulic cylinder with an adjustable angular orientation is the vehicle pumping system comprising the pump, conduits, and nozzle. Therefore, the means-plus-function term “liquid manure mover” corresponds to “a pump, a conduit, and a nozzle.”

EX1004, ¶80.

Patent Owner’s Expert

fluid conduit that is connected to the tangential fluid outlets of the pump.”) The Asserted Patents further describe that the liquid manure pump is immersible:

65 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

See, e.g., ‘835 Patent, col. 2, ln. 65-66.

EX2094, ¶76.



Claim Construction

1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
1. An amphibious vehicle comprising:	17. An amphibious vehicle comprising:	39. An amphibious vehicle comprising:	40. An amphibious vehicle comprising:
a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

EX2094, ¶37.

Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

The ‘835 Patent explains that the pump is “positioned within the liquid manure when the vehicle is floating” (i.e., the ‘835 Patent describes an immersible pump)

telescoping connections to the single fluid conduit. Lower-
ing the fluid pump for immersion into the fluid obviates the
need for priming the fluid pump, which can be problematic 15
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. 20

‘835 Patent (EX1001), col. 3, ln. 13-20.

Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

The liquid manure mover includes a liquid manure pump:

Claim 1 of the '425 Patent	Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and

EX2094, ¶37.

Claim Construction

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1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

The liquid manure mover includes a liquid manure pump:

75. Based on the language of these claims, it is clear the “liquid manure pump” recited in the claims must be a component of the liquid manure mover. Stated differently, the “liquid manure mover” does not include a pump of any type, but more specifically includes a liquid manure pump.

EX2094, ¶75.

Claim Construction

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2. “liquid manure pump” (at least independent claims 1 and 39)

Petitioner’s Expert:

B. “Liquid Manure Pump”

50. Nuhn and Mr. Prairie assert that the institution decision, which preliminarily found that a “liquid manure pump” is a “pump with a structure that is capable of pumping liquid with suspended solids,” overgeneralizes and impermissibly broadens the scope of the “liquid manure pump.” Paper 23, 14. Nuhn asserts that this preliminary finding no longer requires a pump that is capable of pumping liquid manure. *Id.* I disagree; the PTAB was correct.

EX1110, ¶50.

Patent Owner’s Response:

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

Paper 23, 15.

What makes liquid manure different than water?

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Highly Corrosive:



Paper 1,11.

What makes liquid manure different than water?

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Highly Corrosive - Experts Agree

Petitioner's Expert

120. Animal waste is also known to exhibit **corrosive** characteristics and metal exposed to liquid animal wastes, such as those in manure lagoons, can result in significant material loss. One study reports that as much as several millimeters of material could be lost from a metallic plate in a year's time. EX1049, 5. Other studies describe some metal samples losing the entirety of their metal mass in less than 30 months of exposure to the lagoon surface. EX1050, 8. A POSA would have been motivated to avoid exposing certain types of metal equipment, such as vehicle trailers, to corrosive lagoon liquids.

EX1004, ¶120.

Patent Owner's Expert

144. Moreover as asserted by Petitioner and Dr. Winkel, a POSITA would have understood that liquid manure lagoon is highly corrosive. See EX1004, Winkel Decl. ¶ 120. Dr. Winkel asserts that "[a] POSA would have been motivated to avoid exposing certain types of metal equipment, such as vehicle trailers, to corrosive lagoon liquids." *Id.* He's **entirely correct** on this point, and for that very reason a POSITA would have never looked to using an amphibious vehicle in a liquid manure lagoon. Thus a POSITA would not have utilized an amphibious vehicle with

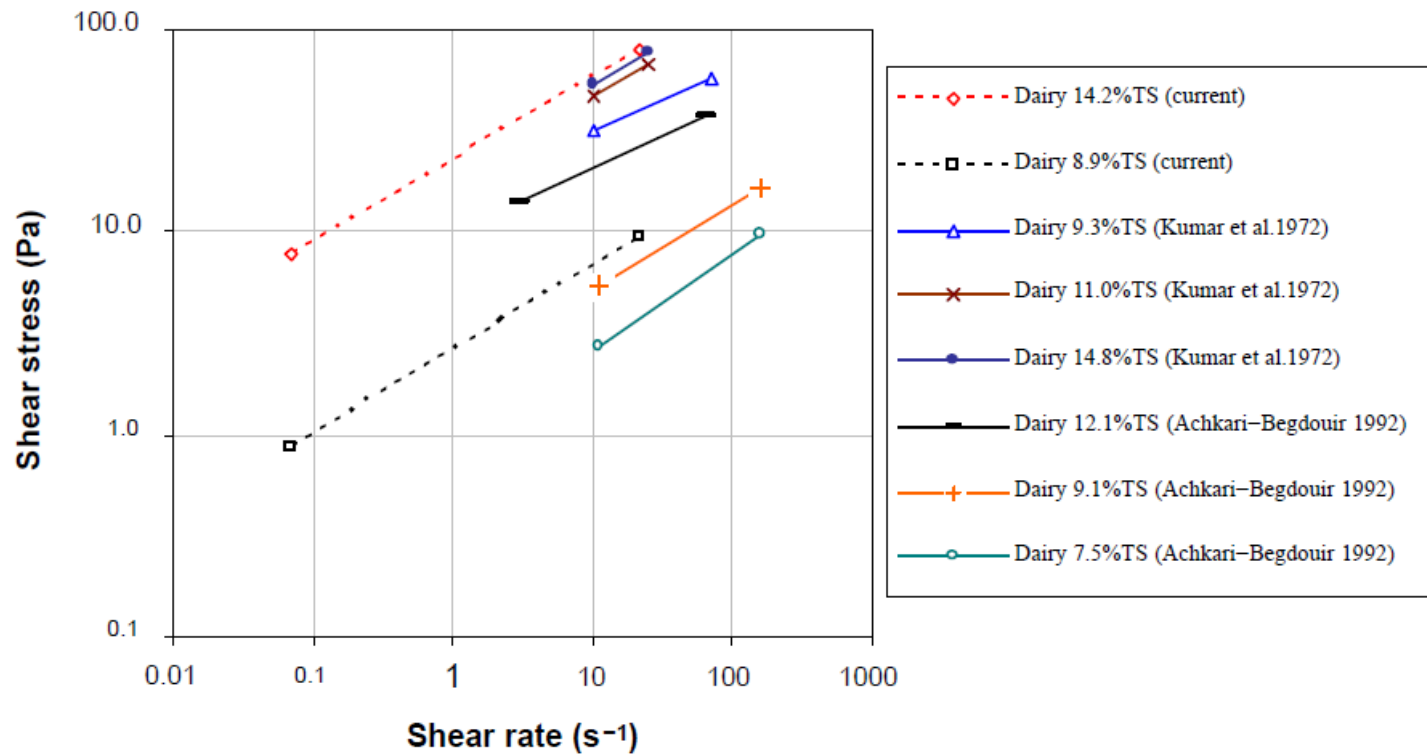
EX2029, ¶144.



What makes liquid manure different than water?

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A Non-Newtonian Fluid With Suspended Solids



EX2097, 9.

Figure 6. Shear stress – shear rate curves for dairy cattle manure (current study and other published results).

FUNDAMENTAL QUESTIONS:

What makes liquid manure different than water?

A Non-Newtonian Fluid - Experts Agree (at least above 5 %TS)

Petitioner's Expert

109. A POSA would have understood that some higher concentrations of manure exhibit non-Newtonian behaviors, specifically shear-thinning characteristics. See, e.g., EX2097, 8. A POSA would have understood that non-Newtonian behavior begins to manifest at higher solids concentrations, higher than the few percent or less solids that are typically found in liquid manures contained in manure lagoons. For example, in a study involving manure from lactating cows and samples taken from a manure storage tank containing bedding, urine, fresh and old manure, and water, Kumar reports that “[w]hen the slurry was below five percent total solids, it showed Newtonian flow properties, and above six percent it showed non-Newtonian (pseudo-plastic) flow properties.” EX1151, 3. Kumar concludes that

Patent Owner's Expert

particular characteristics of the liquids.” EX1038 at 12 (emphasis added). Dr. Winkel entirely ignores that cattle manure—even at 1 to 2% total solids content—has been found to act as a non-Newtonian fluid. See, e.g., EX2097 at 2, H. Landry et al., *Physical and Rheological Properties of Manure Products*, APPLIED ENGINEERING IN AGRICULTURE, at 278 (2004) (discussing study by Chen (1982) that “included rheological properties for TS ranging from 1% to 14%. Beef cattle slurries were described as non-Newtonian pseudoplastic fluids, the deviation from Newtonian behavior increasing with TS”); *id.* at 2 (“Achkari-Begdouri and Goodrich (1992) studied the rheological properties of Moroccan dairy cattle manure with total solids concentrations ranging from 2.5% to 12% at temperatures between 20°C and 60°C. Their results showed that in the ranges

EX2094, ¶115.

EX1110, ¶109.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



Claim Construction

2. “liquid manure pump” (at least independent claims 1 and 39)

Patent Owner’s Expert:

49. POSITAs understand that a “liquid manure pump” is a particular type/class of pump that you can go out and buy / select for manure pumping applications. Indeed, references to “manure pumps” are scattered throughout various advertisements and articles in the Manure-Manager publications (EX1112 and EX1113), demonstrating that this is a term known and used by POSITAs in the art to reference to a particular type / class of pumps. Liquid manure pumps differ from ordinary pumps in that the materials and components of a liquid manure pump must be capable of withstanding the highly corrosive environment of liquid manure lagoons and the shear behavior / forces associated with pumping a non-Newtonian fluid. They must also have components and tolerances that will perform in liquid manure pumping applications without failure or clogging.

EX2106, ¶49.



Claim Construction

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2. “liquid manure pump” (at least independent claims 1 and 39)

Manure Injection Equipment



HOSE

Snap-tite Drag
4 1/2", 5", 5 1/2", & 6"
6" G&H Feeder
200 & 250 PSI
New 8" Supply Hose!



1-800-775-7448
319- 653-5080
www.bazookafarmstar.com

Manufacturing • Manure Injection Systems • Livestock Feeders • Grain Handling

Cornell Manure Pumps



4x4x14T-14
4NHTB-17.5
6NHTB-17.5
6NHTB-19

Manure-Manager:

Cornell Manure Pumps



4x4x14T-14
4NHTB-17.5
6NHTB-17.5
6NHTB-19

EX1112, 23.



Claim Construction

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2. “liquid manure pump” (at least independent claims 1 and 39)

Puck (EX1014):

[0025] Coupled to the power source (36) is a liquid manure pump such as a slurry pump (38). In the preferred embodiment, the slurry pump (38) is a Cornell Redi-Prime centrifugal pump capable of handling both solid and liquid material. The slurry pump (38) is preferably designed to move between one thousand and twenty-four thousand liters of material per minute, more preferably between eight thousand and twenty thousand liters of material per minute, and most preferably about sixteen thousand liters of material per minute.

EX1014, ¶0025.

Claim Construction

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2. “liquid manure pump” (at least independent claims 1 and 39)

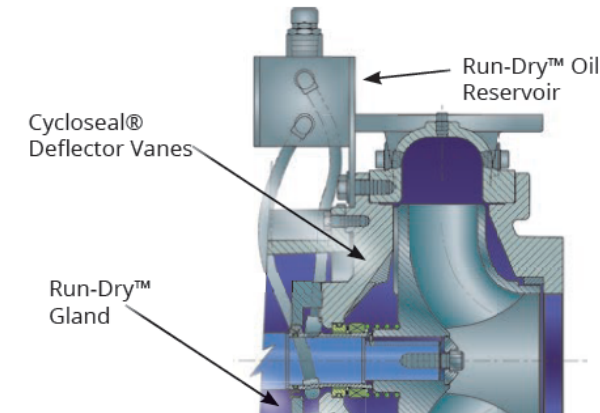
Cornell Redi-Prime (EX1143):

MARKET AND PRODUCT LINE



CYCLOSEAL®

Cornell's Cycloseal® design has proven itself in the toughest applications from manure slurry to starch recovery to sewer bypass and mining applications - in some cases more than tripling the normally expected mechanical seal life.



EX1143, 7.

EX1143, 8.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

Claim Construction

2. “liquid manure pump” (at least independent claims 1 and 39)

The Pump must be designed for or proven in liquid manure pumping applications

Patent Owner’s Expert:

49. POSITAs understand that a “liquid manure pump” is a particular type/class of pump that you can go out and buy / select for manure pumping applications. Indeed, references to “manure pumps” are scattered throughout various advertisements and articles in the Manure-Manager publications (EX1112 and EX1113), demonstrating that this is a term known and used by POSITAs in the art to reference to a particular type / class of pumps. Liquid manure pumps differ from ordinary pumps in that the materials and components of a liquid manure pump must be capable of withstanding the highly corrosive environment of liquid manure lagoons and the shear behavior / forces associated with pumping a non-Newtonian fluid. They must also have components and tolerances that will perform in liquid manure pumping applications without failure or clogging.

EX2106, ¶49.



Evidence of a liquid manure pump?

Patent Owner's Expert:

83. 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.

EX2094, ¶83.

GROUND 1 - Claims 1-10, 13-26, and 29-40 Are Not Anticipated by Carrier [EX1005]

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Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
1. An amphibious vehicle comprising:	17. An amphibious vehicle comprising:	39. An amphibious vehicle comprising:	40. An amphibious vehicle comprising:
a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

EX2094, ¶37.

Claim Construction

1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Corresponding Structure:

Patent Owner’s Expert

73. With respect to point (2), it is my opinion that a POSITA would consider the “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s)” as the corresponding structure. This formulation is different from Bazooka’s formulation in minor, but important ways. It is more consistent with and tracks the language of the claims themselves, which recite a “liquid manure pump” as opposed to simply any “pump” as Bazooka’s formulation appears to imply:

EX2094, ¶89.

GROUND 1 - Claims 1-10, 13-26, and 29-40 Are Not Anticipated by Carrier [EX1005]

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Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and



EX2094, ¶37.

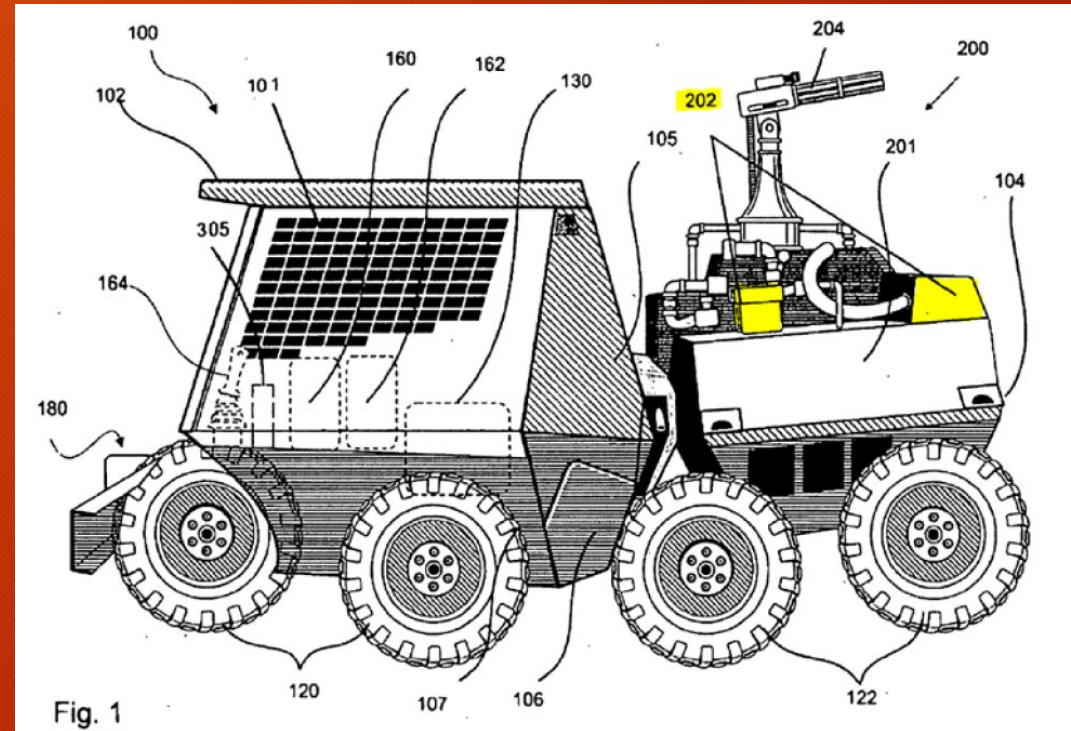
GROUND 1 - Claims 1-10, 13-26, and 29-40 Are Not Anticipated by Carrier [EX1005]

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[0050] The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry

[0061] The use of a pump mounted to the all terrain vehicle which is capable of pumping water from a lake or stream onto a fire is another feature of the present invention. This feature

[0063] The tank 201 can preferably have a recessed top for storage of hoses, multiple 100-foot hoses, and a large fill orifice, a screen to filter debris that would otherwise clog hoses, pump 202 to refill the tank 201 from lakes, ponds, or streams. Additionally, the tank 201 includes a master drain for



EX1005, 2.

EX1005, ¶¶50, 61, 63.

What makes liquid manure different than water?

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Highly Corrosive:



Non-Newtonian Fluid LARGE Suspended Solids:



EX2006, 2.

Paper 1,11.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



GROUND 2 and 3 - Claims 1-5, 7-21, and 23-40 Are Not Obvious based on Truxor [EX1006]/SenwaTec [EX1012] in view of Yoon [EX1011] or Carrier [EX1005]

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Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
1. An amphibious vehicle comprising:	17. An amphibious vehicle comprising:	39. An amphibious vehicle comprising:	40. An amphibious vehicle comprising:
a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

EX2094, ¶37.

Claim Construction

1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Corresponding Structure:

Patent Owner’s Expert

73. With respect to point (2), it is my opinion that a POSITA would consider the “immersible liquid manure pump, fluid conduit(s), and fluid nozzle(s)” as the corresponding structure. This formulation is different from Bazooka’s formulation in minor, but important ways. It is more consistent with and tracks the language of the claims themselves, which recite a “liquid manure pump” as opposed to simply any “pump” as Bazooka’s formulation appears to imply:

EX2094, ¶89.

GROUND 2 and 3 - Claims 1-5, 7-21, and 23-40 Are Not Obvious based on Truxor [EX1006]/SenwaTec [EX1012] in view of Yoon [EX1011] or Carrier [EX1005]

30

Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from a liquid manure pump; (3) control at least one of the speed and	a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid manure mover; (3) control at least one of the speed and



EX2094, ¶37.

GROUND 2 and 3 - Claims 1-5, 7-21, and 23-40 Are Not Obvious based on Truxor [EX1006]/SenwaTec [EX1012] in view of Yoon [EX1011] or Carrier [EX1005]

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Truxor:

The Doro pump is designed for pumping light sediments and volatile sand. The Doro pump is supplied with a screw feed. The intake can be equipped with a suction nozzle when pumping sand or light floating sediments.

EX1007, 123.



EX1006, 10.

GROUND 2 and 3 - Claims 1-5, 7-21, and 23-40 Are Not Obvious based on Truxor [EX1006]/SenwaTec [EX1012] in view of Yoon [EX1011] or Carrier [EX1005]

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BUT SenwaTec's use in municipal (i.e., human) wastewater ponds $\neq$ liquid manure:



With the movements of an amphibian: Eckhard Funck cleans the sewage pond in Mecklar with a new and environmentally friendly technology while sailing and swimming. His frog-like device produces 60 horsepower. Photo: Kaschik

Ludwigsau. He doesn't mind his smelly job. With an amphibious vehicle, Eckhard Funck drives through the **sewage pond** near Mecklar and removes the sludge that has accumulated there within the past years.

This idea is not that far off: "After all, it's **not fecal matter** that's in the sewage sludge," explains the vehicle operator of the frog-like machine, "it's just dead bacteria that previously ate the fecal matter." Thus, what floats in the pond is anything but toilet waste.

EX1027, 3.

EX1027, 2.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

What makes liquid manure different than water?

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Highly Corrosive:



Non-Newtonian Fluid with LARGE Suspended Solids:



EX2006, 2.

Paper 1,10.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



GROUND 2 and 3 - No Motivation to Combine Truxor [EX1006] / SenwaTec [EX1012] with Yoon [EX1011] or Carrier [EX1005] with A Reasonable Expectation of Success

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Truxor:



make it the ideal choice for working in and around water. Driven with care and with its minimal ground pressure, damage to river banks and sensitive areas can be minimised making the Truxor ideal for working on golf courses, nature reserves and public parks where larger, heavier machines have difficulty operating.

EX1006, 2.

Reed cutting & Gathering - Excavation - Dredging

EX1006, 1.

GROUND 2 and 3 - No Motivation to Combine Truxor [EX1006]/SenwaTec [EX1012] with Yoon [EX1011] or Carrier [EX1005] with A Reasonable Expectation of Success

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SenwaTec:

Low ground pressure and good clearance on terrain, **marches and swamps** during on-land drives

EX1012, 1.



40 YEARS OF EXPERIENCE IN THE DEVELOPMENT OF:

- *DITCH CLEANER AND SLOPE MOWERS*
- *MOWING AND CLEARING BOATS*
- *WEED HARVESTERS*
- *AMPHIBIOUS VEHICLES*
- *CUTTER SUCTION AND EXCAVATING DREDGES*

EX1012, 1.

EX1012, 1.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

GROUND 2 and 3 - No Motivation to Combine Truxor [EX1006]/SenwaTec [EX1012] with Yoon [EX1011] or Carrier [EX1005] with A Reasonable Expectation of Success

36

Patent Owner's Expert on adding remote control:

185. Manure lagoons typically have steep embankments that can be covered in manure, mud, sand, and/or ice and are therefore extremely slippery. EX1004, Winkel Decl., ¶336. A POSITA would recognize that Truxor's known instability issues would be exacerbated by remote control. As a result, a POSITA would not have had a reasonable expectation that adding remote control functionality to Truxor would be successful in producing an amphibious remote-controlled vehicle that could operate in a manure lagoon environment without tipping.

EX2094, ¶185.



The digging arm may only be moved laterally when the outriggers touch the bottom. The lateral scope of the digging arm with a mounted Doro pump is 4 metres but for safety reasons only a 2-metre range can be used. This means that the permissible working width from the centre is 2 metres in each direction.

Warning! There is a tilting risk if the maximum range is used.

EX1007, 128.

Potential Rollover Risk

EX1006, 5; *see also* EX1020-EX1021, 1; EX1022, 8.



EX1004, ¶248.

GROUND 2 and 3 - No Motivation to Combine Truxor [EX1006]/SenwaTec [EX1012] with Yoon [EX1011] or Carrier [EX1005] with A Reasonable Expectation of Success

37

Patent Owner's Expert on adding remote control:

213. It is also my opinion, that a POSITA would not 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.

EX2094, ¶213.



EX1012, 2.

GROUND 4 and 5 - Claims 1-40 Are Not Obvious based on Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017]

38

Claim 1 of the '835 Patent	Claim 17 of the '835 Patent	Claim 39 of the '835 Patent	Claim 40 of the '835 Patent
1. An amphibious vehicle comprising:	17. An amphibious vehicle comprising:	39. An amphibious vehicle comprising:	40. An amphibious vehicle comprising:
 a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	 a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;	a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

EX2094, ¶37.

Claim Construction

1. “liquid manure mover” (independent claims 1, 17, 39, and 40)

Corresponding Structure:

Patent Owner’s Expert

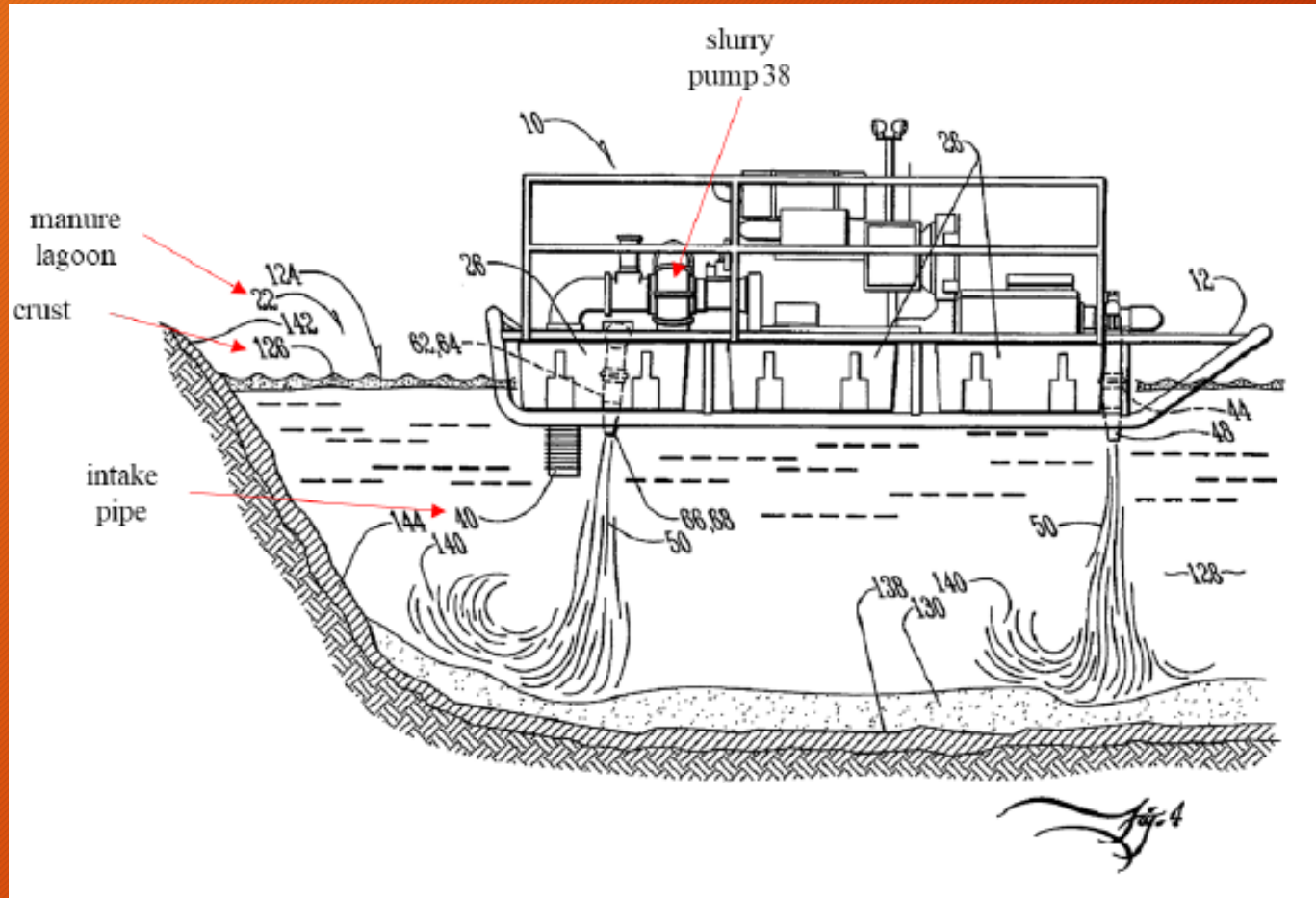
73. With respect to point (2), it is my opinion that a POSITA would consider the “immersed liquid manure pump, fluid conduit(s), and fluid nozzle(s)” as the corresponding structure. This formulation is different from Bazooka’s formulation in minor, but important ways. It is more consistent with and tracks the language of the claims themselves, which recite a “liquid manure pump” as opposed to simply any “pump” as Bazooka’s formulation appears to imply:

EX2094, ¶89.

GROUND 4 and 5 - Claims 1-21 Are Not Obvious based on Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017]

40

Puck:

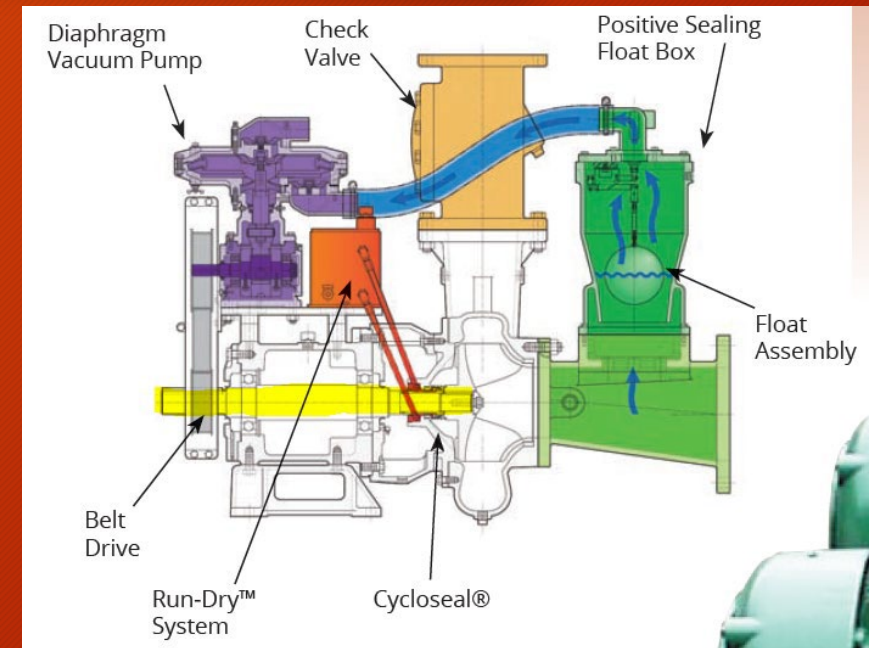
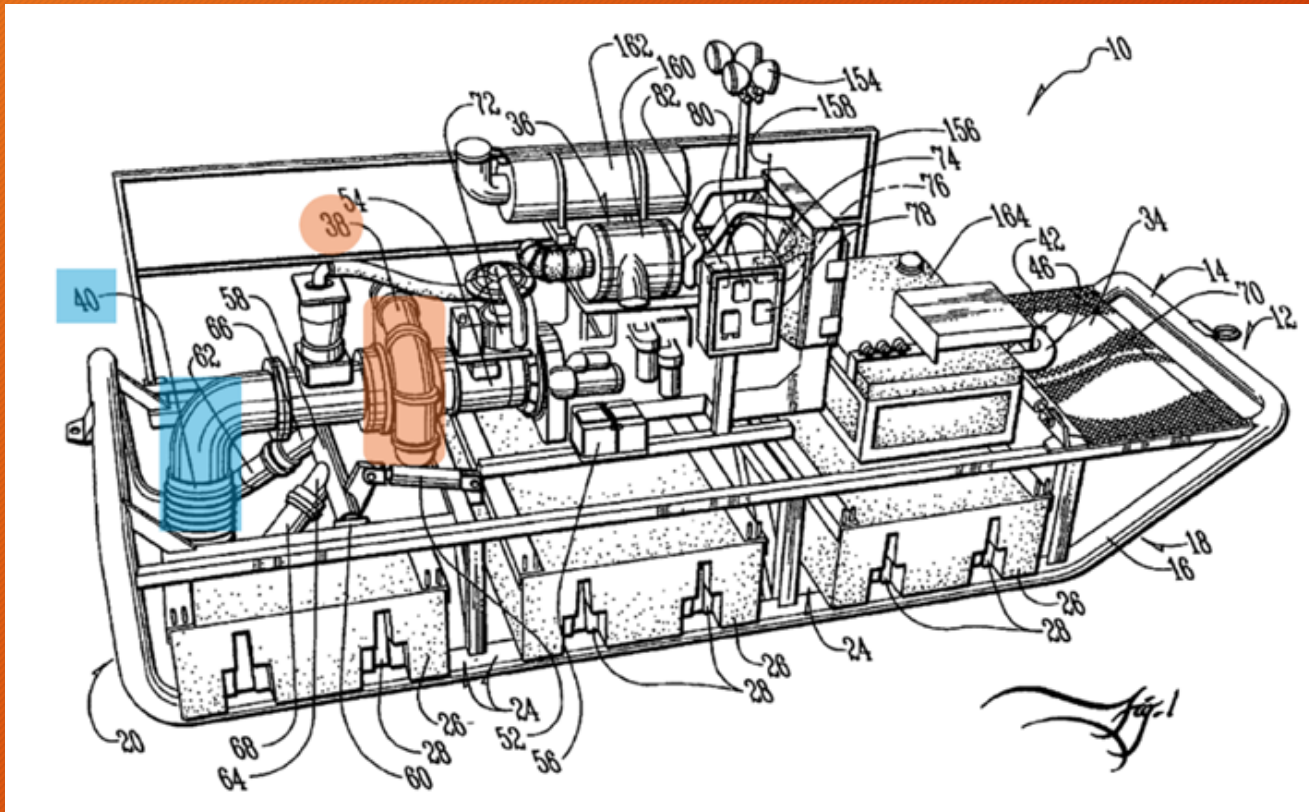


EX1014, 5;
EX2094, ¶233.

GROUNDS 4 and 5 - Claims 1-21 Are Not Obvious based on Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017]

41

Puck (EX1014):



EX1143, 2; EX2106, ¶139.

EX1014, 2;
EX2106, ¶159.



GROUND 4 and 5 - No Motivation to Combine Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017] with A Reasonable Expectation of Success

42

Petitioner's Expert on underlying motivation:

vapors and disease-causing pathogens. *Supra* Section V.B.iv. A POSA would have been motivated to add the powered, steerable wheels to the Puck boat to make the process of launching and retrieving the Puck boat from the manure lagoon safer and easier without having to place a trailer or one's feet into the hazardous and corrosive manure lagoon.

EX1004, ¶333.

corrosive to the vehicle and trailer.” EX1015, 1:55-58. A POSA would have understood that like the sea, manure lagoons are highly corrosive environments with the potential to damage equipment such as towing vehicles and trailers. *Supra* Section V.B.iv. The powered, steerable wheels of Bryham present a solution to the problem of exposing towing vehicles and trailers to corrosive environments by

EX1004, ¶337.

GROUND 4 and 5 - No Motivation to Combine Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017] with A Reasonable Expectation of Success

43

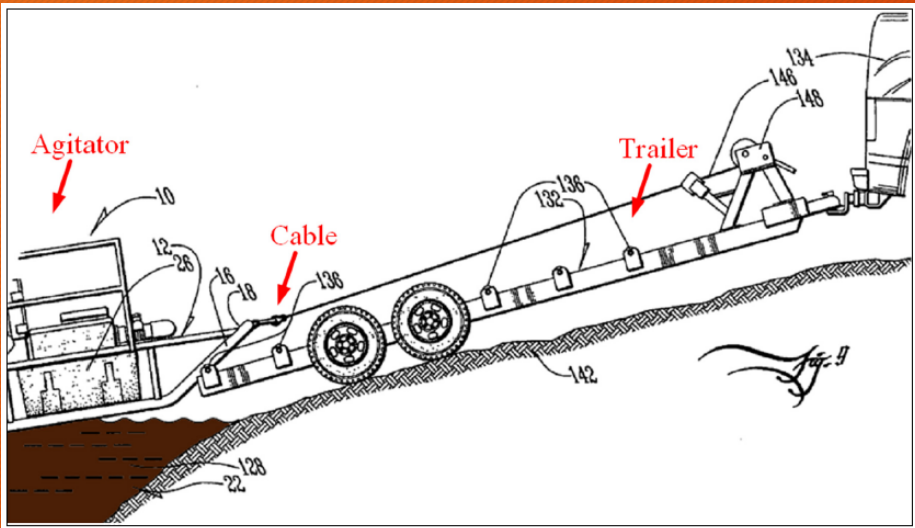
Puck's trailer:

sections (26) and the trailer is backed toward the lagoon (22). (FIGS. 1, 4, 8 and 9). Depending upon the angle of the trailer (132), the agitator (10) may roll off the trailer (132) by the force of gravity or may be manually pushed from the trailer (132) into the lagoon (22). If desired, the trailer (132) may be

EX1004, ¶334; EX1014, 10.

EX2008, 7.

EX1014, ¶34.



DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

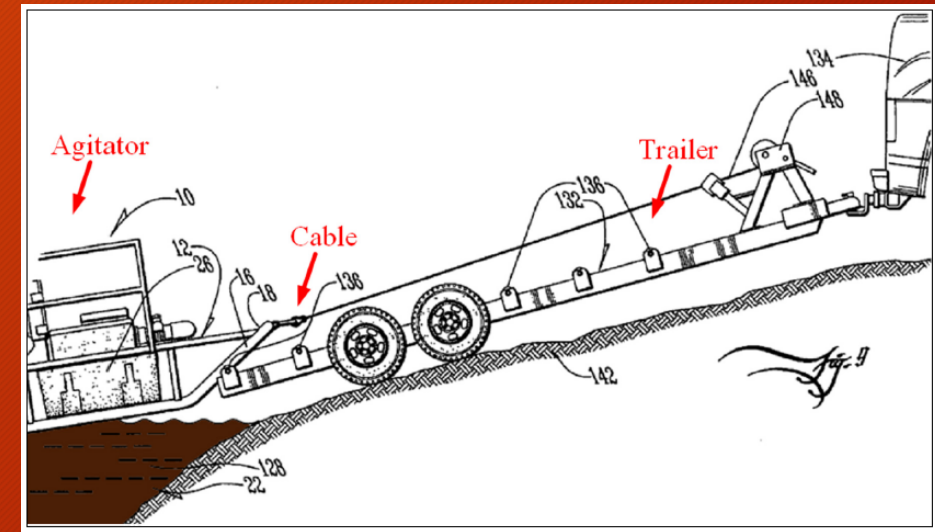
GROUND 4 and 5 - No Motivation to Combine Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017] with A Reasonable Expectation of Success

44

Patent Owner's Expert:

239. In my opinion, POSITA would not have seen any problem with Puck's design in the first place that would have led them to look for the Bryham reference.

240. Furthermore, if a POSITA were concerned about "exposing a towing vehicle and trailer to highly corrosive environments" as Petitioner's expert argues (see EX1004, Winkel Decl., ¶337), 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. 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.



EX1004, ¶334; EX1014, 10.

EX2094, ¶¶239-240.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

GROUND 4 and 5 - No Motivation to Combine Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017] with A Reasonable Expectation of Success

45

Evidence of Skepticism RE: Feasibility of Hydraulically Powered Wheels

- a. the Lagoon Crawler's ground engaging structure (the wheels) were going to get stuck and become inoperative on solids in manure lagoons, impeding our ability to retrieve the Crawler;
- b. the Lagoon Crawler's ground engaging structure (the wheels) are going to leak inside of the liquid manure lagoon and cause the Crawler's hydraulic system to fill with manure thereby rendering the Crawler inoperable;
- c. the Lagoon Crawler's ground engaging structure (the wheels) will not have enough traction to be wireless remote controlled to drive out of the liquid manure lagoon; and

- a. the Lagoon Crawler's hydraulic system fittings are going to corrode, causing the Crawler to lose its oil;
- b. the structure of the Lagoon Crawler is going to be destroyed by the gases in the manure lagoon;

EX2083, ¶¶ 56-57.



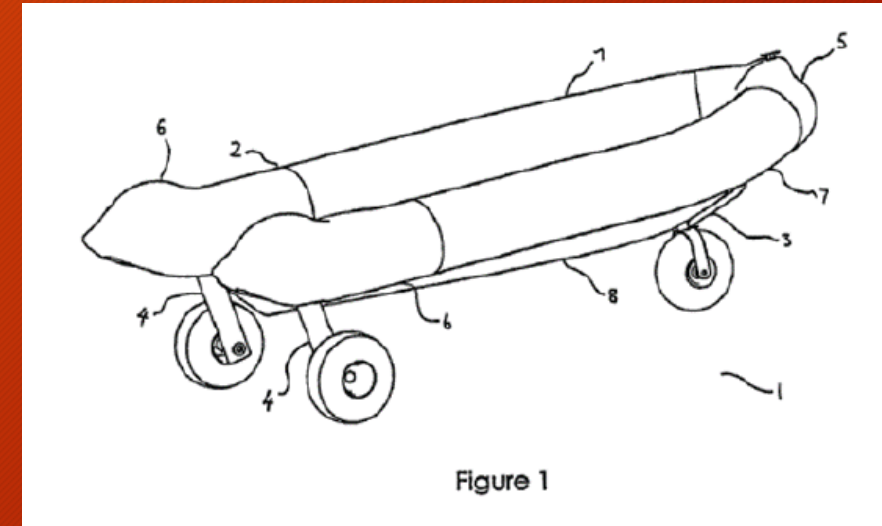
GROUND 4 and 5 - No Motivation to Combine Puck [EX1014] in view of Bryham [EX1015] or in further view of Bennett-II [EX1017] with A Reasonable Expectation of Success

46

Patent Owner's Expert:

251. In my opinion, a POSITA would not reasonably expect that Puck's vessel could successfully drive into and out of manure lagoons even if Bryham's wheels could be added. A POSITA would expect **Bryham's 3-wheel design to be inherently unstable, i.e., prone to tipping if used on steep and uneven terrain.** A POSITA would also expect the one small steerable front wheel in Bryham to be **prone to sliding** in this operating environment and would be ineffective in turning the vehicle. Finally, a POSITA would not expect Bryham's 3-wheel design, with only two powered wheels at the stern, to provide sufficient traction through mud and manure. As a result, Petitioner's expert 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's vessel.

252. In my opinion, **a POSITA would recognize that the instability, steering, and traction issues with Bryham's ground engaging wheels would be exacerbated if remote control were added because remote control is less precise, has greater delay (latency), and it is much more difficult for the operator to perceive and counter tipping (i.e., remote control operators lack tactile feedback through the controls and or an on-board perception of sliding and tipping).** While the operator



EX1015, 2.

EX2094, ¶¶ 251-252.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Commercial Success

47

- Evidence of Commercial Success = Nuhn Declaration [EX2083], ¶¶23-28; Nuhn Sales Report [EX2059].
- Over 112 Lagoon Crawler X models sold, Millions of Dollars in Revenue.
- Quickly Surpassed Puck - prior market share leader:

Prototype at the 2013 North American Manure Expo. Fast forward to today, my market research indicates that the market share for Nuhn's Lagoon Crawler has totally eclipsed the market share for Puck's pumping boat. Based on my

EX2083, ¶27.

GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Long Felt Need

48

Evidence of Long Felt Need = Nuhn Declaration [EX2083], ¶¶17-20, Prairie Declaration [EX2094], ¶¶327-329; [EX1001].

further processing. During storage, a crust can develop on the surface of the pit or lagoon that must be disrupted prior to or during removal of the manure. Pumps are employed for this purpose with jets that return a percentage of the manure back to the pit or lagoon in the form of a high volume spray to disrupt the crust and recirculate the manure. Pumps for use in recirculating manure from smaller pits are known; however, these pumps are typically suitable for accessing the pit or lagoon from its edge and are connected to a tractor or similar land vehicle for operational power. They are therefore limited in their ability to recirculate manure to the middle of large lagoons, which are becoming increasingly common as the size of animal husbandry operations increases.

Accordingly, there is a need for improved pumps and vehicles equipped for pumping, particularly pumps and vehicles suitable for use with large manure lagoons.

18. A typical lagoon has a berm that requires navigation both up and then back down, whereas Puck's design required a trailer to launch the boat. Compounding this difficulty was the fact that the terrain around a lagoon is often muddy and wet. A typical problem with Puck's boat was that it would get stuck on the bank or enter the lagoon too quickly and nosedive under the liquid.

19. Relatedly, Puck's boat was often ineffective in breaking up thick crust and navigating through portions of a lagoon, either because it could not break through the thick crust and vegetation floating on the surface of the lagoon or it got stuck (i.e., "beached") in the sludge at the bottom of the lagoon or on "islands" of solid buildup in the lagoon.

EX2083, ¶¶ 18-19.

EX1001, 1:35-51.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



GROUPS 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Unexpected Results

49

Evidence of Unexpected Results = Prairie Declaration [EX2094], ¶¶330-334; Nuhn Declaration [EX2083], ¶¶29-33; Product Videos [EX2006; EX2007].



EX2007, 3.

EX2006, 2.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE



GROUNDS 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Praise

50



Angle Iron

A WEEKLY LOOK AT **MACHINERY INNOVATIONS**

Agitator has reclaimed manure lagoons around the world



BY BOB REID

The writer lives near Bright
farmhouse@cwisp.ca

Sebringville – With a dramatic entrance usually reserved for rock stars, the unveiling of a revolutionary piece of farming technology occurred here recently.

To the accompanying sound track of Space Odyssey, from concealment under a slowly rising tarpaulin, emerged blindingly bright head lights through the mist surrounding a self propelled liquid manure agitator.

Not just any self-propelled manure agitator but the 100th unit rolling off the assembly line at Nuhn Industries Limited



The majority of the lagoon crawlers have been sold in Wisconsin but some have been sold as far away as China and

Evidence of Industry Praise =
Nuhn Declaration [EX2083],
¶¶34-52; News Publications
[EX2061-EX2074]; Discovery
Channel Segment [EX2080].

EX2070, 52.



GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Skepticism

51

Evidence of Skepticism and Surprise = Nuhn Declaration [EX2083], ¶¶53-63; Discovery Channel Segment [EX2080].

60. Mr. Koscamp—the dairy farmer whose manure lagoon was pumped by the Lagoon Crawler in the Discovery Channel segment during Extreme Machines week—also skeptically “need[ed] to be sold on this” because he “never thought it could be done” (see around 3m:40s and 4m:40s). See EX2080.

EX2083, ¶60.

Early on, one of the biggest challenges was that “a lot of the suppliers didn’t take us seriously,” Nuhn said. “It felt like this project quickly went to the back of their minds because they

EX2068 32.



GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Licensing

52

- Evidence of Licensing = Nuhn Declaration [EX2083], ¶¶64-67; Puck Email [EX2075].
- Prior Market Leader Puck Custom Enterprises sought to license Nuhn's Lagoon Crawler Patents

64. My Lagoon Crawler invention proved so successful that Puck—the prior market leader in agitation boats that Nuhn has since eclipsed with the Crawler—has sought a license to the Lagoon Crawler technology which includes the '835 Patent and the family of related patents.

EX2083, ¶64.

GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Copying

53

Evidence of Copying = Prairie Declaration [EX2094], ¶¶335-354; Nuhn Declaration [EX2083], ¶¶68-76; Bazooka Patent Apps. [EX2048-EX2050]; Stutsman Invoices [EX2076-EX2078].

Nuhn's Lagoon Crawler



EX2043, NUHN15000007242

Bazooka's Wolverine Agitation Boat



EX2031 at 17

EX2094, ¶347.



GROUPS 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Copying

54

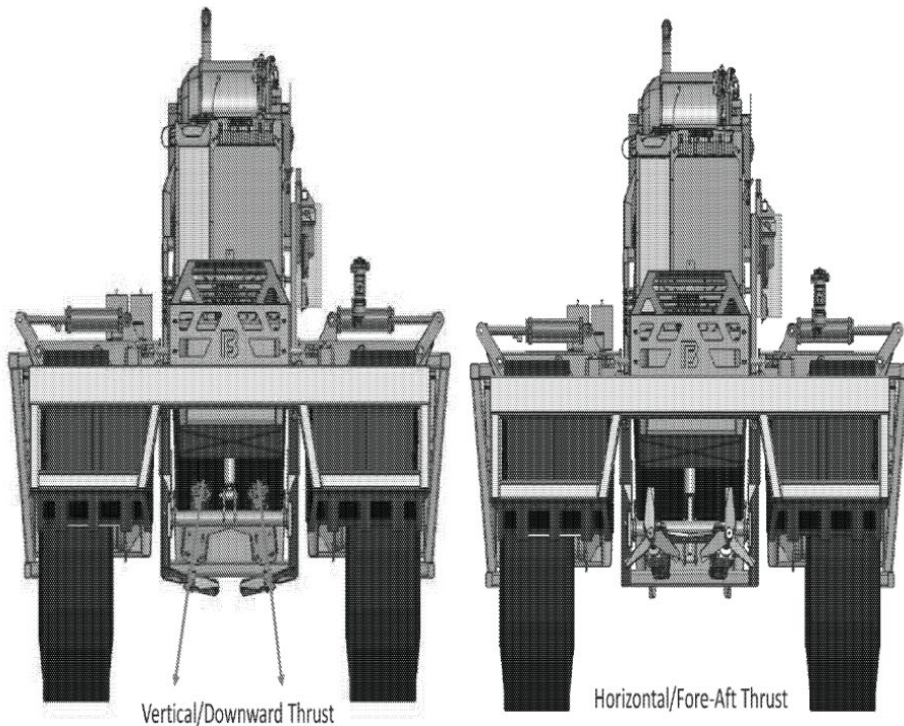


Figure 3A

Figure 3B

EX2048, 18.

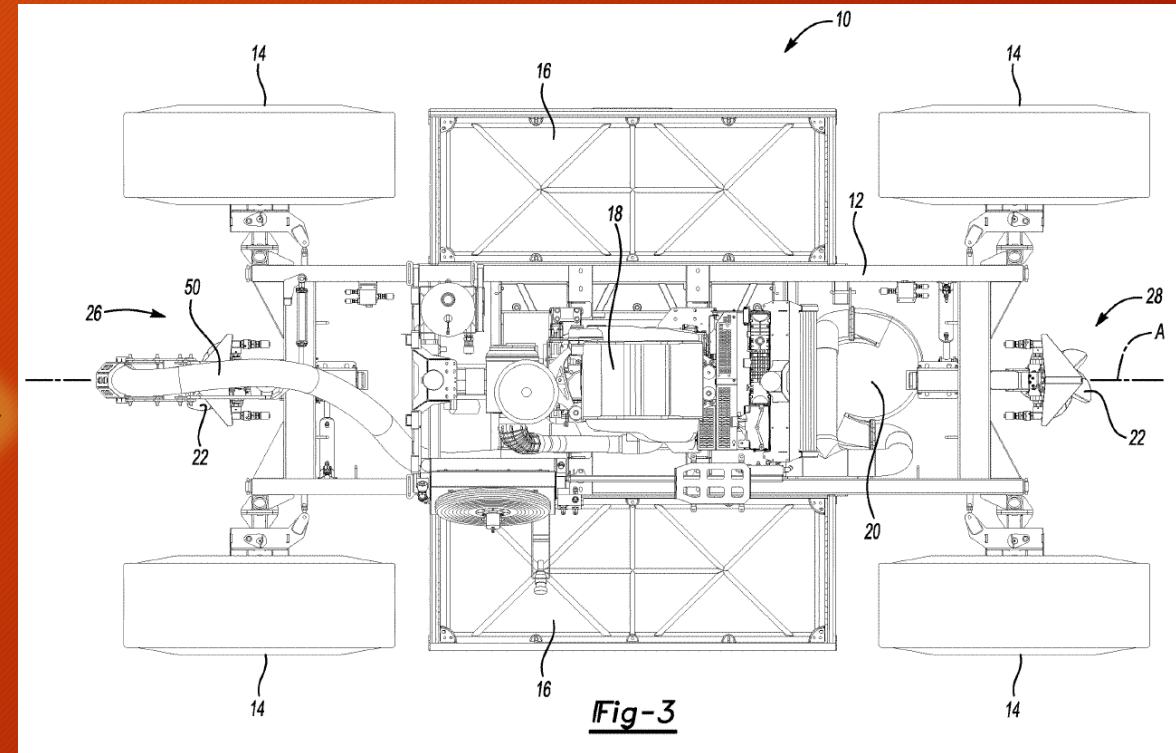


Fig-3

EX2050, 4.

GROUND 2-5 - Secondary Considerations of Non-Obviousness Support Patentability - Nexus

55

Evidence of Nexus = Prairie Declaration [EX2094], ¶¶298-326; EX2035-EX2047.

326. Therefore, in view of the above, it is my opinion that the claims of the '835 Patent cover Nuhn's Crawler X and that Nuhn's Crawler X is commensurate with the scope of the claims of the '835 Patent.

EX2094, ¶326.

DEMONSTRATIVE EXHIBIT - NOT EVIDENCE

