

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. IPR2024-00098

Patent No. 11,541,708

DECLARATION OF DOUGLAS S. PRAIRIE

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I. INTRODUCTION

I, Douglas S. Prairie, declare as follows:

1. I have been retained by Nuhn Industries Ltd. (“Patent Owner” or “Nuhn”) as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (“USPTO”) regarding U.S. Patent No. 11,541,708 (“the ‘708 Patent”). I have been asked to consider whether certain references disclose or suggest the features recited in at least independent Claims 1, 17, 21, and 23 of the ‘708 Patent. My opinions are set forth below. I understand that Petitioner has challenged Claims 1-38 of the ‘708 Patent (“the Challenged Claims”) and that I may be asked to provide my opinions on dependent Claims 2-16, 18-20, 22 and 24-38 at a later date.

2. I have also been retained by Nuhn as an independent expert consultant in IPR2023-01161, which Bazooka-Farmstar, LLC (“Petitioner” or “Bazooka”) filed against U.S. Patent No. 11,358,425 (“the ‘425 Patent”). I have also been retained by Nuhn as an independent expert consultant in IPR2024-00004, which Petitioner filed against U.S. Patent No. 11,491,835 (the ‘835 Patent). I previously filed a declaration in both the ‘425 and the ‘835 proceedings. The ‘708 Patent, ‘835 Patent, and the ‘425 Patent are all continuations filed off of a common PCT application.

3. I am being compensated at my typical rate of \$325 per hour for the time I spend on this matter. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

II. BACKGROUND AND QUALIFICATIONS

4. I am an agricultural engineer with over 25 years of experience in machine design and product development solutions, specializing in off-highway and agriculture machinery systems.

5. I grew up on a family grain and livestock farm in southern Minnesota where I operated tractors, tillage equipment, skid steers, and manure handling and spreading equipment.

My father was a professional mechanic, so we serviced and repaired most of the machinery on our family's operation. I have in-laws who own and operate an 800 head dairy farm near Sioux Falls, South Dakota. I have worked at their dairy farm many times over the past 25 years helping with feeding, equipment maintenance, harvest, tillage, and working with their manure systems. The lagoon on their dairy farm is typical of most lagoons of their herd size in the upper Midwest. It is an earthen style structure with steep side walls and a shallower concrete apron where the tractor and power take-off ("PTO") powered agitator can be backed into the lagoon to agitate prior to the manure being pumped out. The lagoon often crusts over and has a fence around it to minimize the chance for someone to inadvertently walk on a surface that could easily be mistaken for a weedy pasture. My father-in-law always makes sure to remind me of the hazards of the lagoon when my children might happen to be playing near that area of the farm. Fall harvest operations keep everyone busy with their operations, so they often hire a commercial manure applicator to pump the lagoon out and spread or knife in the manure on their harvested ground prior to fall tillage. The commercial manure applicator sometimes brings a floating manure agitator to speed up the lagoon agitation process and produce a more homogenous manure product. The lagoon is pumped out annually in the fall and quite often during the summer months after alfalfa harvest.

6. I am currently employed in Brookings, South Dakota as a lecturer at South Dakota State University ("SDSU") in the Agriculture and Biosystems Engineering ("ABE") Department. SDSU is a premier land grant research and teaching institution and is the first in the country to offer a four-year Precision Agriculture Degree. Courses I am responsible for involve every aspect of the design, operation, service, and ownership of agriculture machinery systems, including livestock manure management technologies. My students include Agriculture and Biosystems Engineers, Mechanical Engineers, Electrical Engineers, Agriculture Technology students and Precision Agriculture students. These students enter the workforce into a wide variety of career paths including design of agriculture machinery systems, design of livestock structures, design of manure management systems, livestock farm owners and operators, plus many other agriculture

careers such as commercial manure applicators.

7. Prior to joining SDSU in August of 2016, I was employed within the agriculture and construction equipment industry for 20 years in roles ranging from design engineering to product and sales management. My experience includes design of planting and seeding equipment, design of concrete placing and cutting equipment, construction project management, design of high horsepower trash pumps, product/sales management of precision agriculture control systems, and research on cellulosic ethanol production systems.

8. In December of 2004, I received a master's degree from Boise State University in Mechanical Engineering, and in May of 1997, I received a bachelor's degree from SDSU in Agricultural Engineering with a Power and Machinery Focus.

9. I am a registered Professional Engineer in the State of Idaho.

10. I have designed and developed a wide variety of agricultural and construction equipment including planting and seeding equipment, precision agriculture control systems, concrete power trowels, concrete saws, and high horsepower job site trash pumps. One of the courses I lead at SDSU is a two-semester Capstone Design course for our senior ABE students. Students that select the Natural Resource tract of the ABE program often work on projects related to the design of agriculture livestock structures and livestock waste management systems. These capstone projects are sponsored by regional livestock farmers, so the students obtain exposure to actual, modern-day livestock industry design challenges.

11. I am the named inventor on 8 patents and 1 pending patent application. These patents are generally directed to seed delivery systems, agricultural implements, and concrete machinery.

12. I have consulted as an expert witness on previous intellectual property disputes involving patents. My work in this capacity has included, among other things, reviewing and analyzing accused products, reviewing and analyzing patents, writing expert reports, and providing deposition testimony.

13. A copy of my curriculum vitae, a list of my patents and patent applications, and a list of the cases I have worked on as an expert witness are attached as EX2005.

III. MATERIAL CONSIDERED AND SUMMARY OF OPINIONS

14. The opinions contained in this Declaration are based on the documents I reviewed, my professional judgment, as well as my education, experience, and knowledge regarding agricultural equipment, farming operations, and manure lagoons.

15. In reaching the opinions and conclusions discussed herein, I reviewed, considered, and/or relied upon the following materials:

<i>Exhibit #</i>	<i>Description</i>
--	Bazooka-Farmstar, LLC's Petition for IPR2024-00098
1001	U.S. Patent No. 11,541,708 ("the '708 Patent")
1002	Prosecution History of U.S. Patent No. 11,541,708 ("the '708 Prosecution")
1003	Curriculum Vitae of Eric Winkel
1004	Declaration of Eric Winkel, dated November 03, 2023 ("Winkel Decl.")
1005	U.S. Patent Application Publication No. 2012/0185129 ("Carrier")
1006	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER ("Truxor")
1007	Declaration of Jan David Arnoldsson, dated February 26, 2023
1008	Declaration of Reidar Olofsson, dated February 27, 2023
1009	Declaration of Nathaniel E Frank-White, dated December 12, 2022
1010	KR Publication No. 20130016490 ("Yoon")
1011	English Translation of Yoon (EX1010) and Declaration of Taylor Liff, dated June 7, 2023
1012	SENWATEC-SCHRÖER UMWELT-& GEWÄSSESTECHNOLOGIE GMBH & CO. KG, LIGHT AMPHIBIOUS BOAT/VEHICLE "AMPHI-KING®" SWT--AB380 ("SenwaTec")
1013	Declaration of Ansgar Lonnemann, dated June 15, 2023
1014	U.S. Patent Application Publication No. 2014/0112093 ("Puck")
1015	U.S. Patent No. 7,314,395 ("Bryham")

1016	U.S. Patent Application Publication No. 2014/0288763 (“Bennett”)
1017	U.S. Patent Application Publication No. 2021/0331752 (“Bennett-II”)
1018	U.S. Provisional Patent Application No. 61/805,133 (“the ‘133 Provisional”)
1019	MANURE MANAGER, Jan./Feb. 2011 (“Manure-Manager”)
1020	MANURE MANAGER, Jul./Aug. 2011 (“Manure-Manager-II”)
1021	Fisher Pumps, Inc., FISHER PUMPS
1022	Declaration of Royal Burrows, Dated June 21, 2023
1023	U.S. Patent No. 7,478,817 (“Carrier-II”)
1024	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (2013) (“Truxor-II”)
1025	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (2013) (“Truxor-III”)
1026	DOROTEA MEKANISKA AB, TRUXOR AMPHIBIAN TOOL CARRIER (“Truxor-IV”)
1027	Russian Patent Application No. 2012137830/11 (“Melnikov”)
1028	English Translation of Melnikov (EX1023) and Declaration of Samuel Goldfarb, dated June 7, 2023
1029	Johanna Kaschik, Der Frosch als Vorbild, HNA (August 25, 2011), https://www.hna.de/lokales/rotenburg-bebra/frosch-vorbild-1376974.html
1030	English Translation of Der Frosch als Vorbild (EX1026) and Declaration of Beverly Santamaria, dated June 8, 2023
1031	Screenshots from UD Umwelt-Dienste GmbH Amphi-King Manure Pumping Video
1032	U.S. Patent No. 8,944,758 (“the ‘758 Patent”)
1033	U.S. Provisional Patent Application No. 61/867,598 (“the ‘598 Provisional”)
1034	Excerpts of Prosecution History of U.S. Patent No. 10,710,422
1035	Excerpts of Prosecution History of U.S. Patent No. 10,974,557
1036	Stipulation Regarding Invalidity Contentions Filed in the ‘015 Litigation
1037	NE. REG’L AGRIC. ENG’G SERV., LIQUID MANURE APPLICATION SYSTEMS DESIGN MANUAL (1998)
1038	DONALD L. PFOST & CHARLES D. FULHAGE, U. MO. EXTENSION, LAND APPLICATION EQUIPMENT FOR LIVESTOCK AND POULTRY MANURE MANAGEMENT (2001) (

1039	DONALD L. PFOST & CHARLES D. FULHAGE, U. MO. EXTENSION, BEEF MANURE MANAGEMENT SYSTEMS IN MISSOURI (2000)
1040	William F. Wright, <i>Dairy Manure Particle Size Distribution, Properties, and Implications for Manure Handling and Treatment</i> , in 2005 ASAE ANN. INT'L MEETING (2005)
1041	EFFECTS OF LIQUID VISCOSITY ON ROTODYNAMIC (CENTRIFUGAL AND VERTICAL) PUMP PERFORMANCE (AM. NAT'L STANDARDS INST. 2010)
1042	Ole Thygesen et al., <i>Indicators of Physical Properties and Plant Nutrient Content of Animal Slurry and Separated Slurry</i> , 5(3) BIOLOGICAL ENG'G TRANSACTIONS 123 (2012)
1043	Randy L. Beaver, William E. Field, <i>Summary of Documented Fatalities in Livestock Manure Storage and handling Facilities—1975-2004</i> , 12 J. AGROMEDICINE 3 (2007)
1044	ROBBIN MARKS, NAT'L RES. DEF. COUNCIL AND THE CLEAN WATER NETWORK, CESSPOOLS OF SHAME (2001)
1045	Dwight D. Bowman & Jeffrey C. Burnham, <i>Manure Pathogens: Real Issues and Real Risks</i> , in PROCEEDINGS OF THE WATER ENV'T FED'N 694 (2000)
1046	U.S. Ctr. for Disease Control, <i>Fatalities Attributed to Entering Manure Waste Pits - Minnesota, 1992</i> , 42 MORBIDITY & MORTALITY WKLY REP. 325 (1993)
1047	U.S. CTR. FOR DISEASE CONTROL, NAT. INST. FOR OCCUPATIONAL SAFETY AND HEALTH, PREVENTING DEATHS OF FARM WORKERS IN MANURE PITS, Publ. No. 90-103 (1990)
1048	U.S. GOV'T ACCOUNTABILITY OFF., GAO-05-96, WORKPLACE SAFETY AND HEALTH: SAFETY IN THE MEAT AND POULTRY INDUSTRY, WHILE IMPROVING COULD BE FURTHER STRENGTHENED (2005)
1049	SIDUO ZHANG, NAT'L COLLABORATING CTR. FOR ENV'T HEALTH, AIR QUALITY AND COMMUNITY HEALTH IMPACT OF ANIMAL MANURE MANAGEMENT (2011)
1050	MANURE STORAGE SAFETY ASAE EP470 JAN1992 (AM. SOC'Y OF AGRIC. AND BIOLOGICAL ENG'GS 2005)
1051	MIDWEST PLAN SERV., LIVESTOCK WASTE FACILITIES HANDBOOK (3d ed. 1993)
1052	C.A. Loto & A.P.I Popoola, <i>Environmental Surface Degradation of Galvanised and Mild Steels in Cattle and Poultry Wastes and Urea Solution</i> , 6(13) INT'L J. PHYS. SCI. 3074-81 (2011)
1053	L.M. Safley, Jr. & P.W. Westerman, <i>Corrosion of Galvanized Steel in Animal Waste Environments</i> , 40 BIORESOURCE TECH. 53 (1992)

1054	FRANK YEAPLE, FLUID POWER DESIGN HANDBOOK (3d ed. 1995)
1055	Charles D. Fulhage, <i>Solids Removal from Livestock Manure Lagoons</i> , U. MO. EXTENSION (Nov. 1995), https://extension.missouri.edu/publications/wq324
1056	U.S. Patent No. 613,809
1057	ED ODGERS ET AL., MANURE GAS SAFETY: REVIEW OF PRACTICES AND RECOMMENDATIONS FOR WISCONSIN LIVESTOCK FARMS (2008)
1058	U.K. Patent App. No. 2,366,218
1059	U.S. DEP'T AGRIC., <i>Agricultural Waste Characteristics</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 4 (2008)
1060	U.S. DEP'T AGRIC., <i>Agricultural Waste Management System Component Design</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 10 (2009)
1061	U.S. DEP'T AGRIC., <i>Waste Utilization</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 11 (2013)
1062	U.S. DEP'T AGRIC., <i>Waste Utilization</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 11 (1996)
1063	U.S. DEP'T AGRIC., <i>Waste Management Equipment</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 12 (2011)
1064	U.S. DEP'T AGRIC., <i>Operation, Maintenance, and Safety</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 13 (2011)
1065	Scheduling and trial Setting Order in the '015 Litigation (Dkt. 76)
1066	Certificate of Correction for U.S. Patent No. 10,124,638
1067	Order Granting Request for Ex Parte Reexamination of U.S. Patent No. 10,974,557
1068	Defendant's Motion to Stay in the '015 Litigation (Dkt. 102, 102-1)
1069	BOATBUILDER'S HANDBOOK (U.S. Coast Guard Revised. Nov. 2003)
2001	Petitioner's <i>Ex Parte</i> Reexamination Requests for U.S. Patent No. 11,358,425 and U.S. Patent No. 10,974,557
2002	Decision Granting Patent Owner's Petition for an Unintentionally Delayed Priority Claim in U.S. Patent. No. 10,124,638
2003	U.S. Patent No. 4,594,006 to Depeault ("Depeault")
2004	Expert Declaration of Douglas S. Prairie (cited here for completeness)
2005	Curriculum Vitae of Douglas S. Prairie and Case List (cited here for completeness)
2006	Screenshots from Patent Owner's YouTube Channel of Patented Product, retrieved on 10-2-23 from https://www.youtube.com/watch?v=fEgvvq9HZkk ("Nuhn Lagoon Crawler YouTube Video Screenshots")

2007	Screenshots from Petitioner’s YouTube Channel of Accused Product, retrieved on 10-2-23 from https://www.youtube.com/watch?v=3y3bSJJUOps (“Bazooka Wolverine YouTube Video Screenshots”)
2008	Screenshots from Progressive Dairyman YouTube Channel of 2014 Manure Lagoon Agitation Boat Demonstration, published on 7-9-14 by Progressive Dairy, retrieved on 10-2-23 from https://www.youtube.com/watch?v=FXRS-9Ip1pE (“Progressive Dairyman YouTube Video Screenshots”)
2009	’708 Patent from Google Patents (with Patent Classification List), retrieved on February 23, 2024 from https://patents.google.com/patent/US11541708B2/en?q=11%2c541%2c708+ (“’708 Patent on Google Patents”)
2010	U.S. Patent No. 4,406,413 to Houle (“Houle”)
2011	U.S. Patent No. 7,833,071 to Gaither (“Gaither”)
2012	U.S. Patent No. 5,176,098 to Royle (“Royle”)
2013	U.S. Patent No. 9,462,741 to Puck (“Puck-II”)
2014	U.S. Patent No. 9,572,297 to Puck (“Puck-III”)
2015	DE2364962 to Kronseder (“Kronseder”)
2016	DE3431345 to Lüllmann (“Lüllmann”)
2017	CA2002619 to Depault (“Depault-II”)
2018	U.S. Patent No. 10,118,138 to Tews (“Tews”)
2019	DANIEL L. PFOST ET AL., UNIV. OF MO. EXTENSION, ANAEROBIC LAGOONS FOR STORAGE/TREATMENT OF LIVESTOCK MANURE (Oct. 2000) (“MU Guide for Anaerobic Manure Lagoons”)
2020	Screenshots from 2023 North American Manure Expo Website, retrieved on 10-2-23 from https://www.manureexpo.ca/
2021	Dictionary Definitions of “Dredging” and “Agitation”, retrieved on 9-30-23 from https://en.wikipedia.org/wiki/Dredging , https://www.merriam-webster.com/dictionary/dredging#dictionary-entry-1 , https://www.merriam-webster.com/dictionary/agitation , and https://www.lagoonpumping.com/articles-resources/agriculture-articles/manure-articles/ (“‘Dredging’ and ‘Agitation’ Dictionary Definition”)
2022	ENVTL. PROT. AGENCY, PRIMER FOR MUNICIPAL WASTEWATER TREATMENT SYSTEMS (Sept. 2004) (“EPA Municipal Lagoon Primer”)
2023	U.S. DEP’T AGRIC., <i>Agricultural Waste Management Systems</i> , in AGRICULTURAL WASTE MANAGEMENT FIELD HANDBOOK ch. 9 (Dec. 2011) (“Waste Management Handbook (Ch. 9)”)

2024	Screenshot of 2023 Commercial Manure Applicator Certification, retrieved on 10-3-23 from https://elearning-dnr.iowa.gov/course/index.php?categoryid=2 (“Commercial Manure Applicator Certification”)
2025	JOSEPH AKYEAMPONG ET AL., <i>Evaluation of hydraulic excavator Human-Machine Interface concepts using NASA TLX</i> , 44 INT’L J. OF INDUS. ERGONOMICS 374, 374–82 (2014) (“Excavator Human-Machine Interface Concepts”)
2026	Screenshots of 2023 Truxor Website, retrieved on 10-1-23 from https://truxor.com/en/catalog/node/products and https://truxor.com/en/catalog/node/products-truxor-machines
2027	Screenshots of 2023 Berky (formerly SenwaTec) Website, retrieved on 10-4-23 from https://www.berky.de/en/berky-nereus-240-amphi/
2028	CHRISTIAN HAAS ET AL., <i>Practical Evaluation of a Control Concept for a Remote Controlled 1.8T Excavator Using a 3D Input Device</i> , BATH/ASME 2022 Symposium on Fluid Power and Motion Control, ISBN: 978-0-7918-8633-5, FPMC2022-88959, V001T01A012-1 thru V001T01A012-7 (2022) (“Practical Evaluation of a Control Concept”)
2029	Timeline Showing Bazooka’s Post-Grant Challenges
2030	January 18, 2023 District Court Order Granting Motion to Lift Stay
2031	Reexamination History of U.S. Patent No. 11,358,425
2032	Screenshots from YouTube of SenwaTec video, retrieved on January 15, 2024 from https://www.youtube.com/watch?v=ecnlfMf7CH4&t=1s (“SenwaTec YouTube Video Screenshots”)
2033	Reexamination History of U.S. Patent No. 10,974,577
2034	McCaslin, Drive Sprockets and Track Drives, TexasFinalDrive.com, https://info.texasfinaldrive.com/shop-talk-blog/drive-sprockets-and-track-drives (last accessed Feb. 25, 2024) (“Drive Sprockets and Track Drives”)

16. My opinions have also been guided by my appreciation of how a person of ordinary skill in the art, as defined below, would have understood the claims and the specification of the ‘708 Patent at the time of the alleged invention.

17. As I discuss in detail below, it is my opinion that the prior art cited by Petitioner fails to disclose or render obvious the Challenged Claims, including at least independent Claims 1, 17, 21, and 23 of the ‘708 Patent. In particular, it is my opinion that Petitioner has not demonstrated that the following Grounds render the Challenged Claims unpatentable:

- Ground 1 – Anticipation of Claim 23 by Bennett-II

- Ground 2 – Obviousness of Claims 1, 8-18, 21-28, and 35-38 by Truxor in view of Yoon or Carrier
- Ground 3 – Obviousness of Claims 1, 8-18, 21-28, and 35-38 by SenwaTec in view of Yoon or Carrier
- Ground 4 – Obviousness of Claims 1, 8-18, 23-28, and 35-38 by Puck in view of Bryham
- Ground 5 – Obviousness of Claims 1, 8-18, 23-28, and 35-38 by Puck in view of Bryham and Bennett-II
- Ground 6 – Obviousness of Claims 1-38 by Truxor and Yoon or Carrier in view of Manure-Manager
- Ground 7 – Obviousness of Claims 1-38 by SenwaTec and Yoon or Carrier in view of Manure-Manager
- Ground 8 – Obviousness of Claims 1-38 by Puck and Bryham (alone or in view of Bennett-II) in view of Manure-Manager

IV. BACKGROUND ON FARM LAGOONS, MANURE AGITATION, AND SPREADING

18. This section describes the general operating environment described in the ‘708 Patent – farm lagoons and pits (i.e., manure lagoons).

19. It is common practice in livestock farming to wash animal manure into a pit or lagoon (hereafter “manure lagoon”). The manure stored in these manure lagoons is pumped out at regular intervals and applied as fertilizer to fields. During storage, the manure in a manure lagoon stratifies into layers, which often includes a hard crust on the surface. As a result, the manure in manure lagoons needs to be agitated from time to time, including before pump-out.

20. The most economic and common construction method for a manure lagoon involves creating a rectangular shaped earthen type of pond structure. This structure usually has steep side walls with bank slopes from 2:1 to 3:1 [EX2019, MU Guide for Anaerobic Manure

Lagoons, p. 4] and sometimes will have a shallower concrete apron for machinery access. The manure lagoon needs to be constructed such that the sides and bottom are sufficiently impermeable to protect groundwater. EX2019, MU Guide for Anaerobic Manure Lagoons, p. 4. Methods and materials to provide this barrier will vary by geographic location and soil type. The magnitude of these manure lagoons will vary based on the livestock herd size and annual local rainfall. It's not uncommon for modern day manure lagoons to be quite large, reaching a surface area of multiple acres.

21. The Depeault reference ([EX2003], U.S. Pat. No. 4,594,006), which was cited during prosecution and is listed on the face of the '708 Patent, further explains that the crust floating on the surface of manure lagoons can become relatively hard, can reach six feet in thickness, and has a consistency of dry peat moss:

2. Description of the Prior Art

Farm animal manure is a slurry containing liquids and solids in suspension. Such manure must be held in holding reservoirs near a barn such as in-the-ground tanks or lagoons. A by product of keeping animal manure is that it can, when required, be spread by suitable spreaders on fields as a fertilizer. The apparatus for spreading the manure normally comprises a closed tank mounted on a vehicle and communicating with a spreader. When required, the manure in the holding reservoir must be transferred into the spreading tanks by suitable pumps.

However, the manure in the holding reservoir tends to separate and the solids may settle to form a thick layer at the bottom of the reservoir and may also form a thick solid crust on the surface of the liquids. Such crust has a consistency of dry peat moss and must therefore be broken up before it can be mixed with the liquid into a slurry and be transferred from the reservoir into the spreading apparatus. It is necessary, therefore, to provide an apparatus for both mixing the solids and forming a slurry with the liquids in the reservoir as well as to have a pumping apparatus for pumping the so-formed slurry into the tank for the spreading apparatus.

Canadian Pat. No. 1,126,257 issued June 22, 1982, 35 describes a proposed solution to the problem by providing a combined slurry mixing device and pump for the purpose of transferring the slurry to some other holding means such as a tank on a spreading apparatus.

There are other patents which describe generally 40 devices for mixing manure in reservoirs for forming a slurry and then pumping the slurry. One of the problems which still exist even in the light of the solutions mentioned above, is the breaking up and mixing of the top crust. The top crust in the reservoir is mostly cow 45 manure. This upper or floating crust can become relatively hard and can reach six feet in thickness. It causes a problem from a mixing point of view since as shown in Canadian Pat. No. 1,126,257, the mixing devices are normally provided at the bottom of the apparatus and 50 near the bottom of the reservoir. In the case of the above mentioned Canadian patent, a nozzle is provided for diverting recirculated slurry as a jet towards the upper crust to try and break the crust. However, it has 55 been found with conventional mixing devices including the above mentioned Canadian patent, that the breaking up of the upper crust and the mixing thereof is very time consuming and therefore, can be costly.

[EX2003], U.S. Pat. No. 4,594,006, col. 1, ln. 13-58 (highlighting added).

22. Manure lagoons are also unique in that the contents of a manure lagoon need to be agitated into as much of a homogenous mixture as possible across the entire lagoon so that the consistency, nutrients, and chemical distribution (e.g., pH) is as uniform as possible. This uniform consistency makes it easier for the manure pumping systems to work as efficiently as possible while also producing a consistent manure product. A homogenous manure product is preferred from an agronomic standpoint as farmers will reduce or eliminate the need for synthetic fertilizers applied to their crop production fields based on the nutrient quality of the manure. If the nutrient consistency of the manure product is highly variable the product will have less economic value and might even cause environmental harm if nutrient content is higher than can be retained by the soils and plants. See [EX2019], MU Guide for Anaerobic Manure Lagoons, pp. 1, 7.

23. These aspects present a unique operating environment for manure agitation vehicles.

24. In the 2013-2014 time period (which coincides with the dates when the Patent

Owner filed its provisional application and PCT application), farmers agitated manure lagoons with either pumps situated at the edge of the manure lagoon, which were typically driven by the PTO of an agricultural tractor (*see, e.g.*, the manure pump described in Depeault [EX2003]) or floating manure agitation “boats” (*see, e.g.*, the vehicle described in Puck [EX1014]).

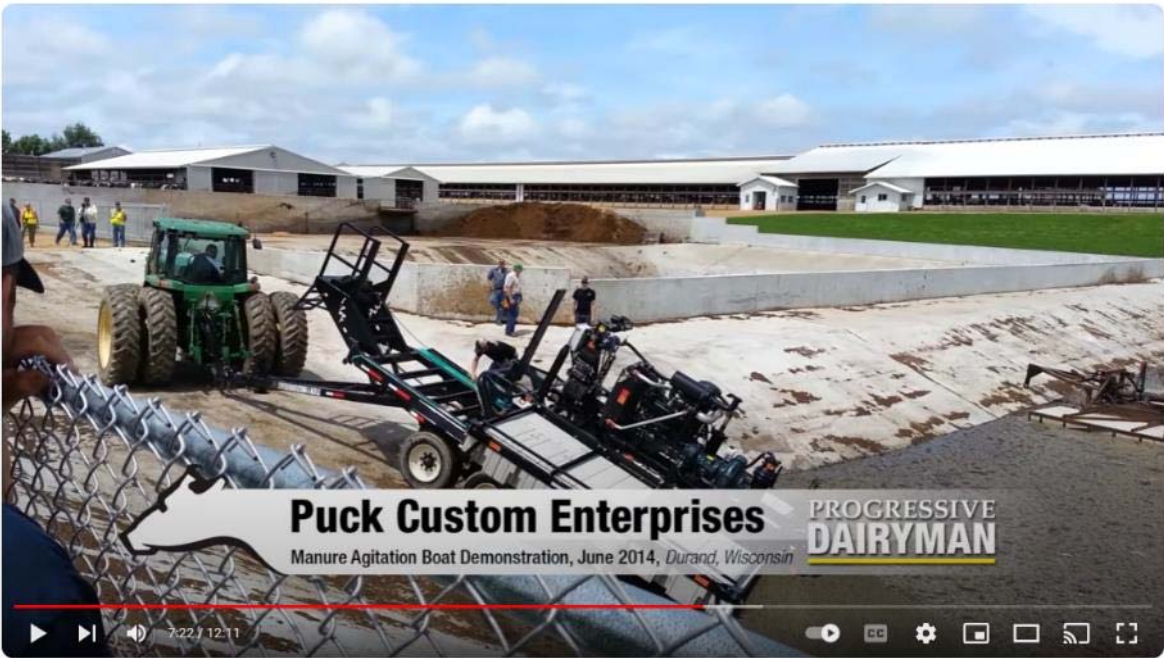
25. In the 2013-2014 time period, floating manure agitation “boats” were barge-like structures that had to be launched and retrieved using a trailer and/or tractor. This is depicted in the screenshots attached as EX2008 and copied below, which are from a video taken by the Progressive Dairyman publication of a manure agitation boat demonstration held in 2014.

26. On October 2, 2023, I personally accessed and viewed this Progressive Dairyman video, which is posted on YouTube at the following link: <https://www.youtube.com/watch?v=FXRS-9Ip1pE>. The YouTube website indicates that this video was posted on July 9, 2014 by Progressive Dairy and that it has received around 69,000 views.

27. On October 2, 2023, I took screenshots from this Progressive Dairyman video and compiled them as EX2008. I therefore certify that the screenshots shown in EX2008 are true and correct images of the Progressive Dairyman video identified in the paragraph above.

28. The Progressive Dairyman video shown in EX2008, states that the manure agitation boat demonstration that is depicted in the video was held in Durand, Wisconsin during the month of June, 2014.

29. Notably, this manure agitation boat demonstration featured traditional manure agitation boats, including the commercial embodiment of the Puck reference [EX1014], alongside the Patent Owner’s newly-released amphibious manure agitation vehicle:



Equipment demonstrations: Manure agitation boats



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Equipment demonstrations: Manure agitation boats



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[EX2008], Progressive Dairyman YouTube Video Screenshots, pp. 4-5.

30. As this video illustrates, the Patent Owner’s commercial embodiment of the ‘708

Patent was the first of its kind and was the only amphibious manure agitation vehicle that could be driven into, operated within, and driven out of the manure lagoon by wireless remote control – meaning that it did not require a tractor and/or trailer for launching and retrieval.

31. The North American Manure Expo is an annual industry trade show and educational event focused on livestock manure technologies. The Manure Expo brings together livestock producers, industry professionals, and equipment providers from across the country with the sole focus of livestock manure management. Their most recent exhibitors list, which is posted on their website at <https://www.manureexpo.ca/>, identifies only companies that are focused on livestock manure management, including lagoon management and agitation systems. I was unable to find any product or service on this list associated with marine dredging, which are the types of products cited by the Petitioner.

32. On October 2, 2023, I took screenshots from the North American Manure Expo website and compiled them as EX2020. I therefore certify that the screenshots shown in EX2020 are true and correct images of the North American Manure Expo website identified in the paragraph above.

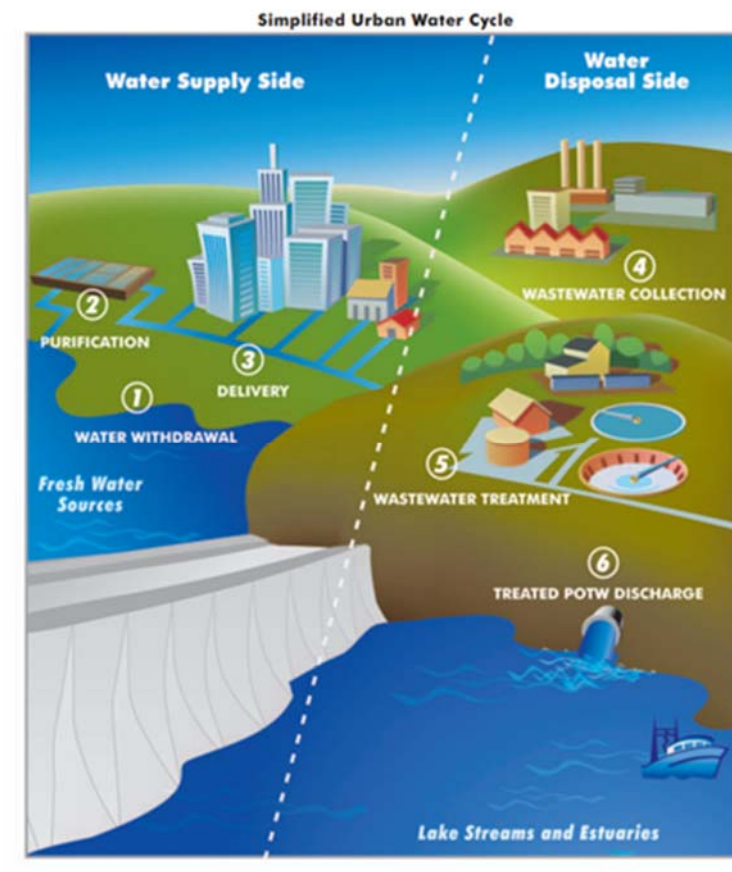
33. The Truxor and SenwaTec references [EX1006] and [EX1012] cited by the Petitioner do not show that it would have been obvious for equipment designed for marine dredging to be used to pump and agitate livestock manure lagoons. Dredging, by dictionary definition, is “to dig, gather or pull out with or as with a dredge” or “to deepen (a waterway) with a machine that removes earth usually by buckets on an endless chain or suction tube”. EX2021, “Dredging” and “Agitation” Dictionary Definitions, p. 2. Dredging equipment is designed to excavate solids from the bottom of shallow bodies of water and transfer those solids to another location. Its design purpose is NOT to agitate and break-up both bottom solids and floating surface crust with the intention of creating a homogenous slurry throughout the entire pond/lagoon like that is desired in a manure lagoon prior to pump-out.

34. As noted, dredging is to dig, excavate, or remove solids from the bottom of shallow

bodies of water and transfer those solids to another location, whereas agitation, by definition, is the “act or an instance of agitating something: a moving back and forth or with an irregular, rapid, or violent action”. [EX2021], “Dredging” and “Agitation” Dictionary Definitions, p. 2. Unlike with dredging, the agitation of a manure lagoon recirculates suspended solids rather than removing them from the lagoon. [EX2021], “Dredging” and “Agitation” Dictionary Definitions, p. 3.

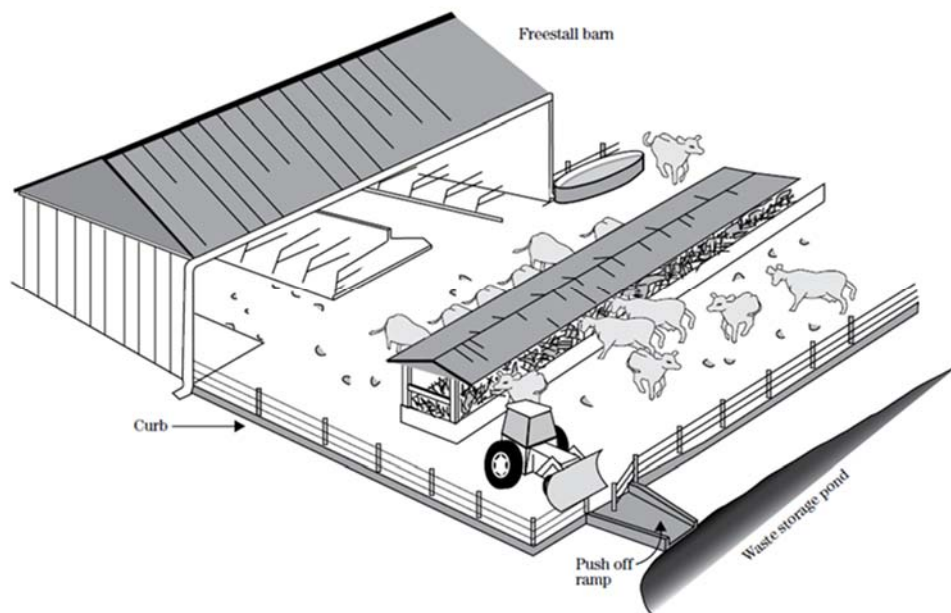
35. The Petitioner also discusses municipal waste lagoons and livestock manure lagoons as if they were the same thing. The reality is that a municipal lagoon is NOT the same as a livestock manure lagoon. In the treatment of human waste, sewer systems are designed to carry human waste, including from domestic, industrial, and commercial sources, to wastewater treatment facilities. [EX2022], EPA Municipal Lagoon Primer, p. 9. Typical wastewater treatment facilities for the treatment of human waste include a primary treatment stage and a secondary treatment stage. [EX2022], EPA Municipal Lagoon Primer, p. 9. In the primary treatment stage, “[c]oarse solids are removed from the wastewater.” [EX2022], EPA Municipal Lagoon Primer, p. 9. Additionally, typical wastewater treatment facilities utilize preliminary treatment units before the primary and secondary treatment stages. [EX2022], EPA Municipal Lagoon Primer, p. 9. During the preliminary treatment, a “screen removes large floating objects, such as rags, cans, bottles and sticks that may clog pumps, small pipes, and down stream processes. The screens vary from coarse to fine and are constructed with parallel steel or iron bars with openings of about half an inch, while others may be made from mesh screens with much smaller openings.” [EX2022], EPA Municipal Lagoon Primer, p. 9. Following screening, the wastewater flows “into a grit chamber where sand, grit, cinders, and small stones settle to the bottom,” and this grit and screenings are periodically collected and removed from the system. [EX2022], EPA Municipal Lagoon Primer, p. 10. After screening, primary sedimentation takes place. [EX2022], EPA Municipal Lagoon Primer, p. 11. At that point, “wastewater still contains dissolved organic and inorganic constituents along with suspended solids.” [EX2022], EPA Municipal Lagoon Primer, p. 11. Therefore, the wastewater enters a sedimentation tank, at which point the water is slowed

down and the suspended solids gradually sink to the bottom of the tank and form a mass of solids called primary sludge. [EX2022], EPA Municipal Lagoon Primer, p. 11. This primary sludge is removed from the sedimentation tank. [EX2022], EPA Municipal Lagoon Primer, p. 11. After the primary treatment process is the secondary treatment stage, during which “up to 90 percent of the organic matter in wastewater” is removed “by using biological treatment processes,” such as through attached growth processes and/or suspended growth processes. [EX2022], EPA Municipal Lagoon Primer, pp. 11. It is during this secondary stage, after coarse solids, grit, sand, and suspended solids have already been removed from the wastewater, that a municipal lagoon may be employed to use “sunlight, algae, bacteria, and oxygen to interact” to “improve water quality” and “purify wastewater.” [EX2022], EPA Municipal Lagoon Primer, pp. 13-14, 27. As such, a municipal lagoon is typically placed at the end of the wastewater treatment process and is primarily meant to disinfect the water before it’s released back to the environment:



[EX2022], EPA Municipal Lagoon Primer, p. 7. This multi-step process to remove solids and sediment from human waste *before* being deposited into a municipal waste lagoon is much different than the process of filling livestock manure lagoons. Specifically, a livestock manure lagoon receives its material directly from the livestock barn and often includes water, livestock feed, bedding, sand, livestock feces, and livestock urine:

Figure 9-5 Confinement area with curbing



[EX2023], Waste Management Handbook (Ch. 9), p. 16, Figure 9-5. These materials stratify once they enter the manure lagoon and need to be periodically agitated to allow effective biological breakdown and removal. A large amount of the solids and debris found in manure lagoons is bedding material, such as straw and sand, that sticks to the manure and gets washed into the manure lagoon. When this material settles out, the straw floats, contributing to the surface crust, and the sand sinks to the bottom. [EX2019], MU Guide for Anaerobic Manure Lagoons, p. 5. Due to the differences between the composition and treatment of human waste versus animal manure, a POSITA would have understood that the requirements for pumping human waste in a municipal sewage lagoon or pond is different than the requirements for pumping manure in a manure lagoon.

V. OVERVIEW OF THE ‘708 PATENT

36. The ‘708 Patent, titled “AMPHIBIOUS PUMPING VEHICLE,” issued on January 03, 2024, from U.S. Patent Application No. 17/886,130, which was filed on August 11, 2022. The ‘708 Patent claims priority to U.S. Provisional Patent Application No. 61/867,598, which was filed on August 19, 2013. [EX1001], ‘708 Patent, pp. 1-2.

37. There are a total of 38 claims in the ‘708 Patent, all of which have been challenged in the Petition. Claims 1, 17, 21, and 23 are written in independent form. A claim chart comparing these claims is provided below for convenience:

38. The “BACKGROUND” section of the ‘708 Patent explains that animal manure produced by cattle and hogs is typically washed into a manure lagoon for storage and later pump out for land application as fertilizer:

BACKGROUND

Manure produced during animal husbandry, particularly 35
hog and cattle manure, is transferred by washing to a pit or
lagoon for storage prior to removal for land application or
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 40
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 45
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 increasing
common as the size of animal husbandry operations 50
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.

55

[EX1001], '708 Patent, col. 1, ln. 35-54 (highlighting added). As explained above, one unique problem that occurs with manure lagoons is that over time a floating "crust" develops on the surface of the manure lagoon that must be disrupted (i.e., broken up) before pump out.

39. The '708 Patent specification explains that operation of the claimed amphibious vehicle in a manure lagoon disrupts the crust and recirculates the manure:

5 In operation, an operator uses the remote controls to maneuver the vehicle to the lagoon entrance, drive the vehicle into the lagoon, raise the ground engaging propulsion structure (wheels), lower the fluid pump, begin pump-
10 ing fluid with the fluid pump through the fluid conduits and selectively open at least the second fluid nozzles to cause the vehicle to move out on to the surface of the lagoon. The valves associated with the side fluid nozzles may also be opened or closed to provide directional control of the vehicle
15 on the lagoon. Once the vehicle is in the desired position, the valves associated with the first fluid nozzle are opened and the first articulation structure is used to position the first fluid nozzle at a desired angular orientation relative to the vehicle body. This is generally an upward orientation so that the
20 fluid is sprayed widely to break crusts of material floating on the surface of the lagoon. In this manner, fluid is recirculated and directed to desired locations in the lagoon. As fluid is emptied from the lagoon, the floating vehicle is permitted to lower with the fluid level. When the lagoon has been
25 sufficiently emptied, the operator is able to reverse the foregoing process in order to maneuver the vehicle to the lagoon exit, lower the wheels, and drive the vehicle up the muddy bank out of the lagoon.

[EX1001], '708 Patent, col. 8, ln. 5-28 (highlighting added).

40. After reading the entire disclosure, a POSITA would come away with the understanding that the amphibious vehicle claimed in the '708 Patent is not a general-purpose amphibious vehicle, but rather is one that is specially adapted for the particular purpose of breaking up the crust that forms on the surface of manure lagoons and recirculating the manure in manure lagoons.

VI. COMMERCIAL EMBODIMENTS

41. Nuhn has its own YouTube channel with videos showcasing its products. On October 2, 2023, I personally accessed and viewed a video showcasing Nuhn's Lagoon Crawler, which is posted on YouTube at the following link:

<https://www.youtube.com/watch?v=fEgvvq9HZkk>. The YouTube website indicates that this video was posted on November 6, 2014 by Nuhn and that it has received around 42,000 views.

42. On October 2, 2023, I took screenshots from this video of Nuhn's Lagoon Crawler and compiled them as EX2006. I therefore certify that the screenshots shown in EX2006 are true and correct images of the Nuhn video identified in the paragraph above.

43. Below is a screenshot taken from a video of Nuhn's Lagoon Crawler, which I understand to be the Patent Owner's commercial embodiment of the '708 Patent, breaking up the surface crust formed on a manure lagoon:



[EX2006], Nuhn Lagoon Crawler YouTube Video Screenshots, p. 2.

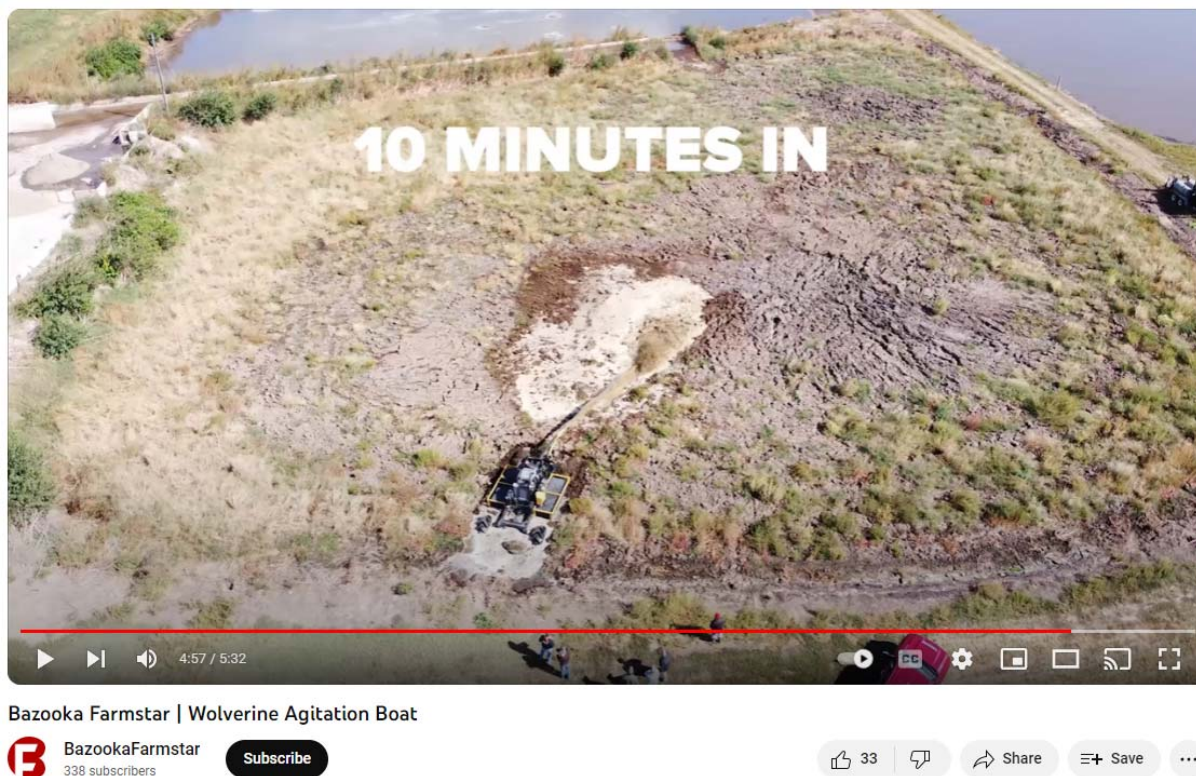
44. Like Nuhn, Bazooka-Farmstar (“Bazooka”) also has its own YouTube channel with videos showcasing its products. On October 2, 2023, I personally accessed and viewed a video showcasing Bazooka’s Wolverine Agitation Boat, which is posted on YouTube at the following link:

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

The YouTube website indicates that this video was posted on July 11, 2021 by BazookaFarmstar and that it has received around 6,000 views.

45. On October 2, 2023, I took screenshots from this video of Bazooka’s Wolverine Agitation Boat and compiled them as EX2007. I therefore certify that the screenshots shown in EX2007 are true and correct images of the BazookaFarmstar video identified in the paragraph above.

46. Below is a screenshot taken from a video of Bazooka’s Wolverine Agitation Boat, which I understand to be the accused product in the underlying litigation, breaking up the surface crust formed on a manure lagoon:



[EX2007], Bazooka Wolverine YouTube Video Screenshots, p. 3.

47. As these videos demonstrate, the crust that forms on the surface of manure lagoons can become quite dense and overgrown with grass and other plants, making agitation and pump-out difficult.

VII. APPLICABLE LEGAL STANDARDS AND PRINCIPLES

48. I am not an attorney and do not purport to offer legal opinions. In forming my opinions, however, I have been asked to apply certain standards pertaining to the patentability issues presented in this proceeding that I know from my experience as an inventor and expert witness or were provided to me by counsel for the Patent Owner.

49. I understand that for a patent to be valid, the invention claimed in the patent must be new, useful, and non-obvious. I understand that, in this *inter partes* review, the Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence.

A. The Prior Art

50. I understand that applicable patent law provides categories of information that constitute prior art that may be used to “anticipate” patent claims or to render them “obvious.” I understand that for a reference to qualify as “prior art” in an *inter partes* review, the reference must have been published, patented, or must have been the subject of a patent application by another person, before the priority date of the patent, and in this matter, must satisfy one of the standards of 35 U.S.C. § 102.

B. Anticipation

51. I understand that a claim of a patent is invalid if the claimed invention is not new. I understand that the scope of prior art is limited in *inter partes* reviews. It is my understanding that a claimed invention is not new if all the limitations of the claim are described in a single prior art reference, and as arranged in the claim.

52. I understand that the prior art reference does not have to use the same words as those used in the claim, but that all the limitations must be present, either expressly or inherently, so that a person having ordinary skill in the art viewing the reference would have everything necessary to make and use the invention as claimed. I understand that something is inherent in a prior art reference if it necessarily exists in the prior art reference.

53. Therefore, it is my understanding that a single prior art reference that discloses each requirement of a claim, either expressly or inherently, invalidates the claim by anticipation.

C. Obviousness

54. I understand that a claim is unpatentable if the differences between the claim and the prior art are such that the claimed subject matter as a whole would have been obvious to a person having ordinary skill in the art. Obviousness may be shown by a single prior art reference or by a combination of prior art references.

55. Although I understand that a finding of obviousness may be based upon combining

prior art references, I also understand that a patent claim may not be proved obvious merely by demonstrating that each of its limitations was independently known in the prior art. I further understand that there must be a motivation to combine elements of the prior art in the manner claimed. I also understand that a claim cannot be found obvious based on a hindsight combination of components selected from the prior art using the patent claims as a roadmap.

56. I further understand that in determining whether a prior art reference would have been combined with other prior art, a showing must be made that a person of ordinary skill in the art would have a reasonable expectation that the asserted combination could be made successful and would achieve the claimed invention.

57. In determining whether a claim would have been obvious, I understand that obviousness is determined from the perspective of a person having ordinary skill in the art in the field of the claimed invention. I understand that as part of my analysis of whether a given patent claim is obvious, I should consider: (1) the level of ordinary skill in the pertinent art; (2) the scope and content of the prior art; (3) the differences, if any, between the prior art as a whole and the claim at issue; and (4) as appropriate, secondary considerations of non-obviousness.

VIII. PERSON OF ORDINARY SKILL IN THE ART

58. I understand that Petitioner asserts that a person of ordinary skill in the art (“POSITA”) for the technology underlying the ‘708 Patent would have had “a bachelor’s degree in mechanical engineering or similar field, and two years of professional experience in marine and off-road vehicles. A [POSITA] would have had a working knowledge of fluid pumps and livestock manure.” Petition, p. 30; [EX1004], Winkel Decl. ¶60. Petitioner also states that a “[l]ack of work experience can be remedied by additional education, and vice versa.” [EX1004], Winkel Decl. ¶60.

59. I disagree with the Petitioner’s definition of a POSITA because it excludes those most familiar with manure agitation equipment – livestock farmers and commercial manure applicators. A commercial manure applicator is a person who is employed by a business entity

engaged in the business of transporting, handling, storing, or applying manure for a fee. *See* [EX2024], Commercial Manure Applicator Certification, p. 1.

60. The Petitioner’s definition of a POSITA is overly generic and made without reference or regard to the sole application for the claimed vehicle – manure lagoon agitation/pumping.

61. The ‘708 Patent repeatedly mentions “animal husbandry” (i.e., livestock farming operations) and the problems encountered when storing and pumping animal manure in farm lagoons or pits. [EX1001], ‘708 Patent, col. 1, ln. 27-51; col. 3, ln. 14-23; col. 7, ln. 20-46; col. 8, ln. 5-28.

62. Moreover, the ‘708 Patent has been classified as being directed to “amphibious vehicles specially adapted for particular purposes” and “manure” handling:

Classifications

- B60F3/0061 Amphibious vehicles specially adapted for particular purposes or of a particular type
- A01C23/045 Filling devices for liquid manure or slurry tanks
- A01C3/026 Storage places for manure, e.g. cisterns for liquid manure; Installations for fermenting manure with mixing or agitating devices

[EX2009], ‘708 Patent on Google Patents (highlighting added).

63. The ‘708 Patent does not suggest that the claimed vehicle finds utility in doing anything other than operating in manure lagoons.

64. Based on this intrinsic evidence, it is my opinion that 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.”

65. All of my opinions in this declaration are from the perspective of a POSITA, as I have defined it in the preceding paragraph, during the relevant timeframe of August 2013.

IX. CLAIM CONSTRUCTION

66. I understand that in an *inter partes* review proceeding, the claim terms are to be construed in accordance with the ordinary and customary meaning of such term as understood by a POSITA.

67. I understand that when interpreting the claims, the primary focus must be on the intrinsic evidence, which consists of the claim language, the specification, and the prosecution history. I further understand that extrinsic evidence, such as definitions found in dictionaries and handbooks, is less pertinent and persuasive than the intrinsic evidence. I also understand that express definitions of terms in the patent should govern the construction of the claims. I have followed these claim construction principles in my analysis.

68. I have given particular consideration of three limitations from the Challenged Claims of the '708 Patent: the term "liquid manure" and relatedly the phrase "a liquid manure pump," as "first buoyant element [situated/is] *between* the first front wheel and the first rear wheel" and "second buoyant element [situated/is] *between* the second front wheel and the second rear wheel."

A. "liquid manure"

69. Several prior art patents cited on the face of the '708 Patent also use the term "liquid manure" in describing their inventions. These patents use the term "liquid manure" to broadly refer to the contents of a manure lagoon as opposed to narrower formulations based on the percentage of total solids (%TS) like in the prior art cited by Petitioner. *See, e.g.*, [EX2013], US9462741B2 to Puck (Puck-II); [EX2014], US9572297B2 to Puck (Puck-III); [EX2015], DE2364962A1 to Kronseder; [EX2016], DE3431345A1 to Lüllmann. Nor do the other patents cited on the face of the '708 Patent that describe manure agitation equipment limit the scope of their inventions based on the percentage of total solids (%TS). *See* [EX2003], US4594006A to Depeault (Depault); [EX2017], CA2002619A1 to Depeault (Depault-II); [EX2010], US4406413A to Houle; [EX2018], US10118138B2 to Tews. Therefore, I do not see any evidence that anyone

in the art has limited their manure agitation inventions.

70. The waste management handbook [EX1059] – [EX1064] referenced by Petitioner’s expert ([EX1004], Winkel Decl., ¶71) discusses handling characteristics of different categories of manure. What the referenced figure ([EX1063], p. 89, Figure 12-92) at ¶71 of Dr. Winkel’s Declaration does not fully reflect is that manure agitation equipment must be capable of pumping all of the different classes of manure shown in the handbook’s Figure 12-92, because they may all be present in a manure lagoon when agitation is needed. This is because manure typically becomes **stratified and settled out** over time. When agitation begins, the manure in the manure lagoon is not yet mixed and can consist of pure liquid, solids at the bottom, localized solid buildup, and a grassy field-like crust on the top. The intent of manure agitation equipment such as that shown in the ‘708 Patent specification is to be able to break up and agitate all manure categories from liquid through solids, where they are all mixed together during the agitation process. The well-mixed contents of the manure lagoon is then pumped out. As a result, manure agitation equipment must be capable of handling greater solids than manure pump-out equipment.

71. In my opinion, a POSITA would interpret the references to “liquid manure” in the ‘708 Patent claims as the “animal manure contained in a farm lagoon, which includes suspended solids.”

72. A POSITA would arrive at this interpretation after seeing that the Patent Owner equates “liquid manure” to “animal manure contained in a farm lagoon” in the TECHNICAL FIELD section of the ‘708 Patent:

TECHNICAL FIELD

25

The invention relates to pumps and vehicles equipped for pumping. In particular, the invention relates to manure pumps and amphibious vehicles equipped for pumping liquid manure, such as animal manure contained in a farm lagoon. 30

[EX1001], ‘708 Patent, col. 1, ln. 25-31 (highlighting added).

73. The '708 Patent specification also explains that liquid manure stored in a manure lagoon has a crust formed on its surface and includes solid materials that can clog traditional pumps:

BACKGROUND

Manure produced during animal husbandry, particularly 35
hog and cattle manure, is transferred by washing to a pit or
lagoon for storage prior to removal for land application or
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 40
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 45
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 increasing
common as the size of animal husbandry operations 50
increases.

[EX1001], '708 Patent, col. 1, ln. 35-51 (highlighting added).

outlets. A greater number of tangential fluid outlets may be
provided, for example three fluid outlets. The tangential 5
fluid outlets may be combined into a single fluid conduit for
directing the combined output of the fluid pump to a desired
location. The vehicle may comprise structure configured to
cause raising and lowering of the fluid pump, especially the
fluid pump housing, relative to the vehicle body. For 10
example, a hydraulically or electrically driven linear actua-
tor may be provided on the vehicle and configured to raise
and lower the fluid pump. This may be accomplished via a
telescoping structure or a lever structure of the vehicle. The
tangential fluid outlets may be equipped with flexible or 15
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
when the fluid is manure comprising solid materials that can
plug the pump or priming structure. Immersion of the pump 20
also simplifies intermittent operation of the pump, due to
eliminating potential loss of prime, and reduces the need for
pump maintenance.

[EX1001], '708 Patent, col. 3, ln. 4-23 (highlighting added).

5 In operation, an operator uses the remote controls to maneuver the vehicle to the lagoon entrance, drive the vehicle into the lagoon, raise the ground engaging propulsion structure (wheels), lower the fluid pump, begin pumping fluid with the fluid pump through the fluid conduits and
10 selectively open at least the second fluid nozzles to cause the vehicle to move out on to the surface of the lagoon. The valves associated with the side fluid nozzles may also be opened or closed to provide directional control of the vehicle
15 on the lagoon. Once the vehicle is in the desired position, the valves associated with the first fluid nozzle are opened and the first articulation structure is used to position the first fluid nozzle at a desired angular orientation relative to the vehicle body. This is generally an upward orientation so that the
20 fluid is sprayed widely to break crusts of material floating on the surface of the lagoon. In this manner, fluid is recirculated and directed to desired locations in the lagoon. As fluid is emptied from the lagoon, the floating vehicle is permitted to lower with the fluid level. When the lagoon has been
25 sufficiently emptied, the operator is able to reverse the foregoing process in order to maneuver the vehicle to the lagoon exit, lower the wheels, and drive the vehicle up the muddy bank out of the lagoon.

[EX1001], '708 Patent, col. 8, ln. 5-28 (highlighting added). As such, POSITA would understand that the "liquid manure" described in the '708 Patent, includes solids and a surface crust.

B. "liquid manure pump"

74. After reviewing the prosecution history, it is my opinion that a POSITA would interpret the claimed "liquid manure pump" as "a pump that pumps manure" as opposed to a pump that is merely capable of pumping liquid manure in the theoretical sense if someone attempted to put a pump to that use. In particular, a POSITA would see and rely on the fact that during *ex parte* reexamination of the '425 Patent, the USPTO explained that the '425 Patent claims were allowable because the prior art did not disclose "a pump that pumps manure":

Reexamination

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

The following is an examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding: **claims 1-21 are allowed over the art cited with the request. The examiner has considered and found persuasive the arguments that a pump that pumps manure has different requirements than one that pumps water.** These arguments were submitted with the response to the first action in reexamination 90/019,076 that stems from the grandparent application of this patent. **Further, without impermissible hindsight, there would not be proper motivation to combine a device like Carrier with a device like Puck. Therefore, the examiner has determined that the prior art does not reasonably show an amphibious vehicle that can be mobile on both land and liquid that pumps manure, in combination with the other claimed elements.**

[EX2031], Reexamination History of U.S. Patent No. 11,358,425, p. 6 (highlighting added).

C. “first buoyant element [situated/is] *between* the first front wheel and the first rear wheel” and “second buoyant element [situated/is] *between* the second front wheel and the second rear wheel”

75. Independent claims 17, 21, and 23 of the '708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel. In particular, claim 17 recites “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.” Similarly, claim 21 states that “the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel.” And claim 23 recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear

wheel.”¹

76. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle” and independent claim 21 recites “a first buoyant element on a first *side* of the vehicle body and a second buoyant element on a second *side* of the vehicle body” (emphasis added).

77. In view of the above disclosure, a POSITA would understand that the first front wheel, the first rear wheel, and the first buoyant element are all on one side of the vehicle body (i.e., either the right side or left side of the vehicle body) and that the second front wheel, the second rear wheel, and the second buoyant element are all on an opposite side of the vehicle body (i.e., the left side or the right side of the vehicle body). In my opinion, a POSITA would find it illogical and would not interpret the first front wheel and the first rear wheel as being on opposite sides of the vehicle body. It is therefore my opinion that a POSITA would understand the claim language quoted above, which describes the arrangement of the buoyant elements between the front and rear wheels on each side of the vehicle, to mean that “a buoyant element is positioned in the space between the front wheel and the rear wheel on each of the right and left sides of the vehicle body.”

78. It is also my opinion that a POSITA would *not* understand the language of the claims as describing buoyant elements that are centrally located in the middle of the vehicle body where they would be bisected by the longitudinal axis. This is because a POSITA would *not* consider a buoyant element centrally located in the middle of the vehicle body to be situated “between the first front wheel and the first rear wheel” or “between the second front wheel and the

¹ I understand that the bracket portions of this claim were removed by the USPTO’s June 27, 2023 Certificate of Correction ([EX1002], 1). I may continue to include the bracketed portions for the sake of clarity throughout this declaration.

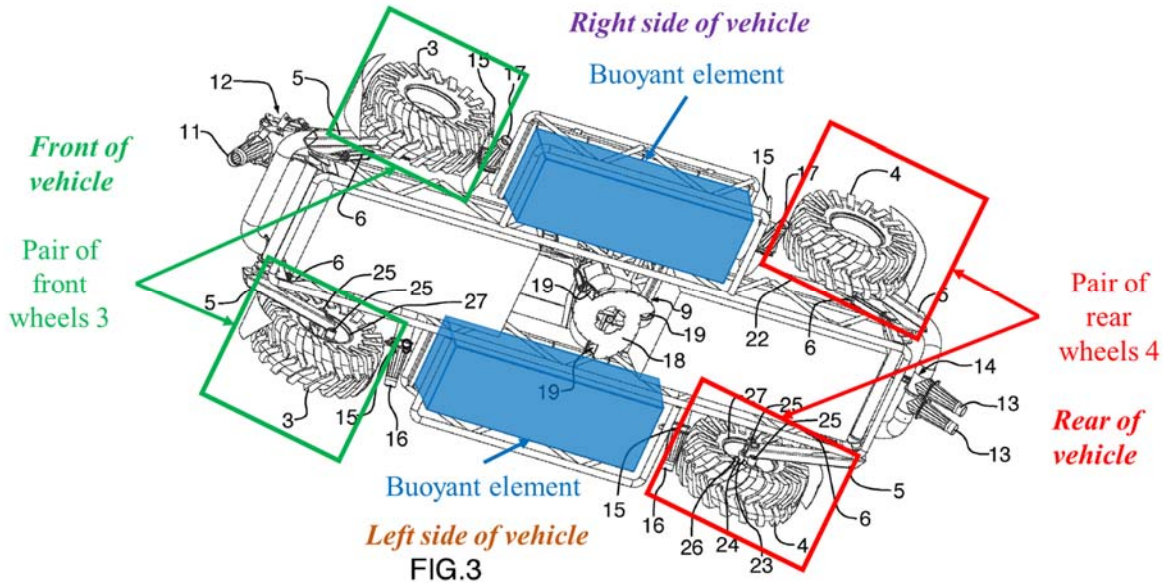
second rear wheel” since a centrally located buoyant element would not be positioned in the space between the front wheel and the rear wheel on either of – much each of – the right and/or left sides of the vehicle body.

79. My opinions are supported by claim language itself, as quoted above, and are further supported by the specification and drawings, which describe and illustrate a front set of wheels 3 on the right and left sides of the vehicle body 1 and a rear set of wheels 4 on the right and left sides of the vehicle body 1. In particular, the specification explains that the wheels “[m]ay be provided in pairs with one wheel of each pair disposed on *opposite sides* of the vehicle.” EX1001, ‘708 Patent, col. 2, ln. 13-14 (emphasis added). The specification also explains that there is a “front of the vehicle” ([EX1001], ‘708 Patent, col. 4, ln. 8) a “rear of the vehicle” ([EX1001], ‘708 Patent, col. 4, ln. 8-9), a “right side of the vehicle” ([EX1001], ‘708 Patent, col. 3, ln. 51), and a “left side of the vehicle” ([EX1001], ‘708 Patent, col 3, ln. 52). Therefore, the “opposite sides of the vehicle” refers not to the front or rear of the vehicle, but to the right and left sides of the vehicle.

80. This is further supported by the language in the specification explaining how the vehicle steers on land. The specification describes that the vehicle has “two sets of wheels 3, 4” ([EX1001], ‘708 Patent, col. 5, ln. 31-32), including a “front set of wheels 3” ([EX1001], ‘708 Patent, col 6, ln. 19-20) and a “rear set of wheels 4” ([EX1001], ‘708 Patent, col. 6, ln. 35) where each wheel is driven by a hydraulic motor 25, ([EX1001], ‘708 Patent, col. 6, ln. 19-40), and that “increasing the rotational speed of the hydraulic motors 25 on the *right side* relative to the motors 25 on the *left side*, the vehicle is caused to turn to the left” ([EX1001], ‘708 Patent, col. 6, ln. 32-34 (emphasis added)). The specification also describes the detailed support structure and drivetrain for “the *right side wheel* of the set of wheels 3,” which is duplicated for each of the wheels 3, 4. [EX1001], ‘708 Patent, col. 6, ln. 19-40 (emphasis added).

81. In view of this description in the specification and the Figures of the ‘708 Patent, including FIG. 3 illustrated below, a POSITA would understand the “first front wheel” and the “second front wheel” recited in the claims as referring to the right front wheel and the left front

wheel, or vice versa, and the “first rear wheel” and the “second rear wheel” recited in the claims as referring to the right rear wheel and the left rear wheel, or vice versa:



[EX1001], ‘708 Patent, FIG. 3 (annotated). As shown in FIG. 3 above, one wheel 3 of the pair of front wheels 3 is on the left side of the vehicle, one wheel 3 of the pair of front wheels 3 is on the right side of the vehicle, one wheel 4 of the pair of rear wheels 4 is on the left side of the vehicle, and one wheel 4 of the pair of rear wheels 4 is on the right side of the vehicle. Thus, the first set of front wheels 3 are in a side-by-side spaced relationship on opposite sides (i.e., the right and left sides) of the vehicle at the front end of the vehicle body and the second set of rear wheels 4 are in a side-by-side spaced relationship on opposite sides (i.e., the right and left sides) of the vehicle at the rear end of the vehicle body.

82. The specification further describes “a vehicle body 1 incorporating buoyant elements 2” where “[t]he buoyant elements comprise flotation tanks of the type that may be foam filled and used, for example, in the construction of floating docks.” [EX1001], ‘708 Patent, col. 5, ln. 26-30. As shown in the annotated copy of FIG. 3 above, one buoyant element 2 is situated in the space between a first front wheel 3 and a first rear wheel 4 on the right side of the vehicle and another buoyant element 2 is situated in the space between a second front wheel 3 and a second

rear wheel 4 on the left side of the vehicle. A POSITA would understand the two buoyant elements shown in FIG. 3 on the right and left sides of the vehicle as being “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.”

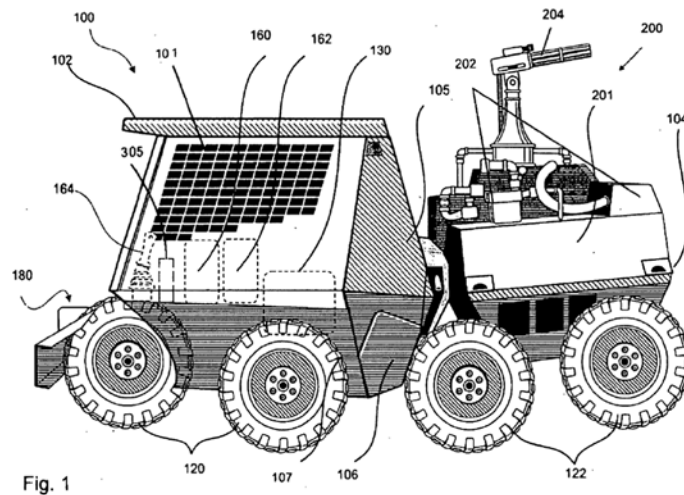
83. Therefore, it is my opinion that a POSITA would understand the claim language reciting a “first buoyant element [situated/is] between the first front wheel and the first rear wheel” and a “second buoyant element [situated/is] between the second front wheel and the second rear wheel” to mean “a buoyant element is positioned in the space between the front wheel and the rear wheel on the each of the right and left sides of the vehicle body.”

X. OVERVIEW OF THE CITED ART

84. In this section I describe the references cited by Petitioner.

A. Carrier [EX1005]

85. Carrier teaches a general-purpose amphibious vehicle having various objectives, none of which are agricultural in nature. For example, Carrier describes one “objective is to provide a multi-purpose vehicle for National Security issues such as Sneek [sic] and Peek operations and Silent Search and Destroy Missions.” EX1005, Carrier, ¶ [0015]. “Another objective is to provide a multi-purpose vehicle for Military and National Security issues such as Explosive Energy Defeat and Ballistic Armor Capabilities.” [EX1005], Carrier, ¶ [0016]. Carrier goes on to describe that its general-purpose amphibious vehicle can optionally be equipped with a water pump and water cannon for firefighting. [EX1005], Carrier, ¶¶ [0060]-[0061]. In particular, Carrier states that an important feature of its vehicle is that “the tank, hoses, and pump may be readily removed from the vehicle through the use of quick-release devices.” EX1005, Carrier, ¶ [0060].



86. Carrier describes that its vehicle has an “ability to transport a pump or other device to direct the water, foam and dry chemicals at the fire, as well as decontamination solutions for decon missions.” See EX1005, Carrier, ¶ [0059]. The optional pump in Carrier is further described as “capable of pumping water from a lake or stream,” not liquid manure from a farm lagoon. See EX1005, Carrier, ¶ [0061]. Carrier does not include any description that the pump has any capabilities beyond pumping water, foam, dry chemicals at a fire, or decontamination solutions. Carrier does not state that its pump is capable of pumping liquid manure. And Carrier includes no description of the structure of its optional pump. Carrier makes no reference to manure, farm lagoons, or animal husbandry (livestock farming).

B. Truxor [EX1006]

87. Truxor describes an amphibious vehicle that is designed to carry an onboard operator and a number of different tool attachments. [EX1006], Truxor, pp. 6-15. In particular, the tool attachments of Truxor includes aquatic weed cutters ([EX1006], Truxor, pp. 6-7), rakes ([EX1006], Truxor, pp. 8-9), buckets and log grabbers ([EX1006], Truxor, p. 9), dredge pumps ([EX1006], Truxor, pp. 10-11), excavators ([EX1006], Truxor, p. 12), cultivators ([EX1006], Truxor, p. 13), and oil decontamination tools ([EX1006], Truxor, pp. 14-15). Truxor does not describe that its vehicle or its dredge pumps are used to pump manure or are even capable of

pumping manure.



[EX1006], Truxor, p. 5.

88. The vehicle in Truxor is advertised as being designed for weed removal and dredging. [EX1006], Truxor, p. 1. Additionally, Truxor states: “Driven with care and with its minimal ground pressure, damage to river banks and sensitive areas can be minimised [, sic] making the *Truxor* ideal for working on golf courses, nature reserves and public parks where larger, heavier machines have difficulty operating.” [EX1006], Truxor, p. 2. Truxor makes no reference to manure, farm lagoons, or animal husbandry (livestock farming). Truxor also does not describe that any of its onboard controls can be operated by remote control.

C. SenwaTec [EX1012]

89. Like Truxor, SenwaTec discloses an amphibious vehicle that is designed to carry an onboard operator and a number of different tool attachments. EX1012, SenwaTec, p. 2. For example, SenwaTec’s tool attachments include hydraulic augers, tree cutters, clearing and collecting rakes, t-cutter bars, mowing buckets, excavating buckets, suction augers, and centrifugal pumps. [EX1012], SenwaTec, pp. 2-3. SenwaTec’s marketing material does not describe that its vehicle or its centrifugal pumps are used to pump manure or are even capable of pumping manure.

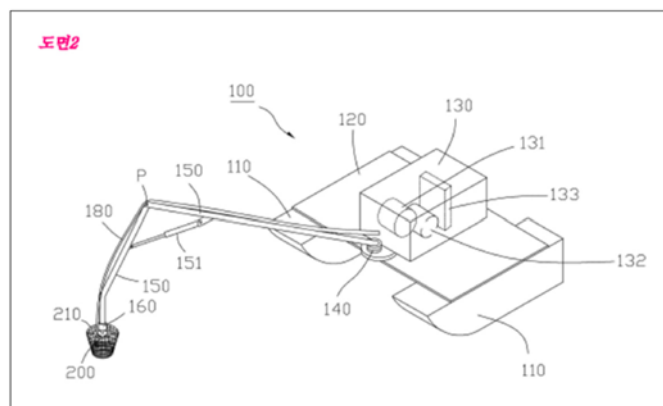


[EX1012], SenwaTec, p. 2.

90. The vehicle in SenwaTec is advertised as being designed for weed removal and dredging. [EX1012], SenwaTec, p. 1. SenwaTec shows that it has at least 8 different control interfaces. [EX1012], SenwaTec, p. 1. However, SenwaTec does not describe that any of its onboard control interfaces can be operated by remote control. Instead, SenwaTec describes that its cockpit has: “Conveniently and comfortably arranged operational control levers for easy operator’s reach as well as monitoring instruments in clear view to the operator’s position.” [EX1012], SenwaTec, p. 3. SenwaTec makes no reference to manure, farm lagoons, or animal husbandry (livestock farming).

D. Yoon [EX1010 and EX1011]

91. Yoon describes a remote-controlled vehicle with an onboard water pump 131:

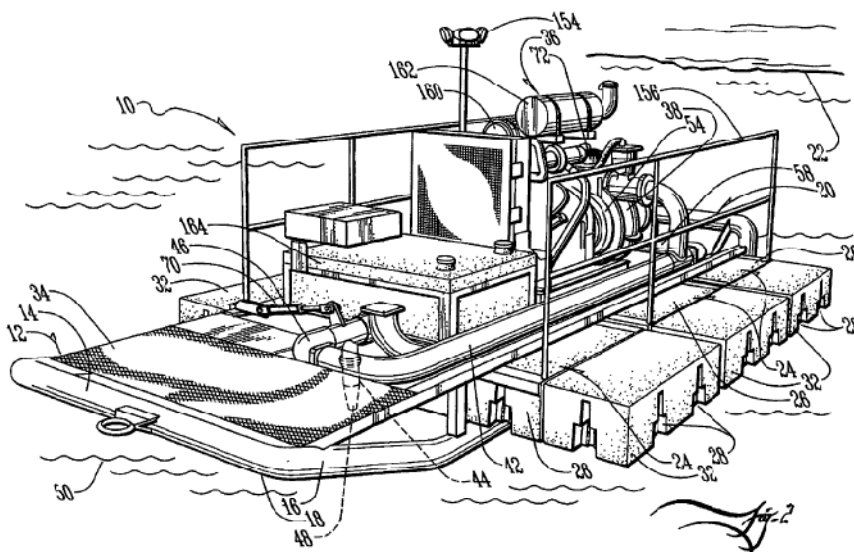


[EX1010], Yoon, p. 10.

92. Yoon describes that its “invention is about an amphibious water treatment device that is installed at streams or on storage tanks, reservoirs, and so on, into which waste materials are dumped in order to treat industrial waste materials.” [EX1011], Yoon, ¶ [0001]. Yoon includes a main body 130 in which a water pump 131 is installed. [EX1011], Yoon, ¶ [0047]. The water pump 131 of Yoon is not immersed in the storage tank or reservoir. Yoon’s water pump 131 pumps wastewater and sludge from the storage tank or reservoir and into a water collection device 300, where it is “separated into wastewater and sludge.” [EX1011], Yoon, ¶ [0070]. Then, “the sludge separated from the stored water is collected by a sludge transportation car, which is not illustrated, and then treated.” [EX1011], Yoon, ¶ [0077]. Yoon only includes a generalized statement that “a remote receptor (not illustrated) is installed on the controller (133) installed on the main body (130) in order for the operator to control work using a remote controller from the land.” [EX1011], Yoon, ¶ [0048]. However, other than this generalized statement, Yoon provides no details as to how its remote control is designed or implemented.

E. Puck [EX1014]

93. Puck teaches a traditional manure agitation boat that must be launched and retrieved using a trailer:

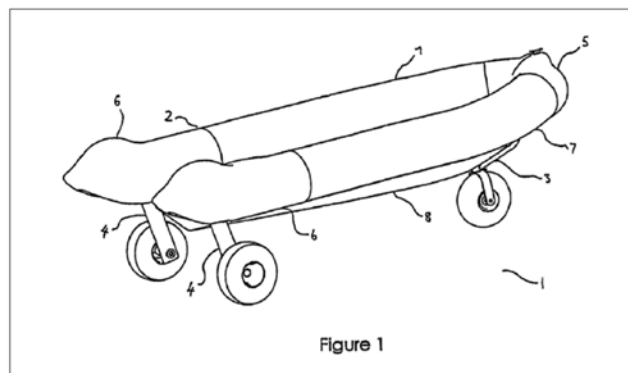


[EX1014], Puck, p. 3, FIG. 2.

94. Puck describes that its vessel 12 includes modular dock sections 26. [EX1014], Puck, ¶¶ [0022]-[0023]. Puck describes that it includes a slurry pump 38, which is a Cornell Redi-Prime centrifugal pump. [EX1014], Puck, ¶ [0025]. Puck describes that the “slurry pump (38) is coupled to a liquid manure intake, such as a slurry intake, which is a downwardly directed intake pipe (40)” and that the “intake pipe (40) is constructed to extend about twenty-four inches below the surface of the lagoon (22).” [EX1014], Puck, ¶ [0026]. Figures 1, 2, 6, and 8 of Puck show the slurry pump 38 with only a single inlet and a single outlet. [EX1014], Puck, pp. 2, 3, 7, and 9. Figure 4 of Puck shows the slurry pump 38 above the manure lagoon 22 and above the crust 126. [EX1014], Puck, p. 5. Puck does not include any ground engaging propulsion structure. Instead, Puck’s agitation boat is “transported to the manure lagoon (22) using a trailer (132) and pulling vehicle (134).” [EX1014], Puck, ¶ [0034]. Puck includes a remote control system 64, but because Puck lacks a ground engaging propulsion structure, Puck does not include any description that its remote control system 64 can control a ground engaging propulsion structure.

F. Bryham [EX1015]

95. Bryham describes a three-wheeled land propulsion and steering system that retracts into and extends out from a boat hull:



[EX1015], Bryham, p. 2.

96. Bryham describes a vee-boat hull with three wheels (one at the bow and two at the

stern). In one embodiment, Bryham describes its boat as an “inflatable craft 2, fitted with a single nose undercarriage assembly 3 and two aft undercarriage assemblies 4, providing means for the craft to travel over land.” [EX1015], Bryham, p. 22, col. 11, ln. 56-59. Bryham also states that its craft includes fiberglass cowlings “towards the front of the craft and towards the rear 6,” that the “cowlings are shaped to conform to the lines of the inflatable tubes 7,” and that the undercarriage assemblies 3 and 4 can be “retracted and stowed within the cowlings 5 & 6.” [EX1015], Bryham, p. 22, col. 11, ln. 59 – col. 12, ln. 4. Bryham does not describe any sort of remote control. Nor does Bryham make any reference to manure, farm lagoons, or animal husbandry (livestock farming).

G. Bennett-II [EX1017]

97. Bennett-II describes a general-purpose amphibious vehicle that has a pair of tracks:

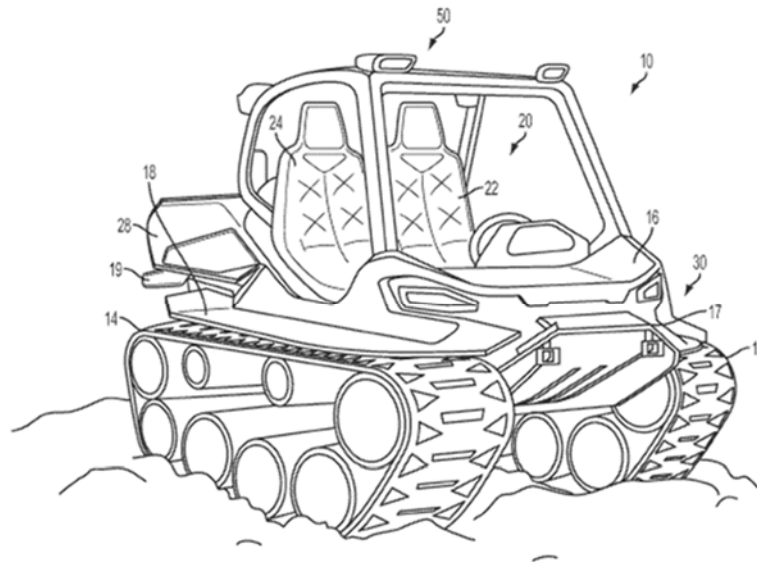


FIG. 1

[EX1017], Bennett-II, p. 2.

98. Bennett-II describes that its vehicle 10 has a pair of tracks 12, 14 that are driven by two drive units 590, 592 through a transmission 550 that is powered by an engine 502:

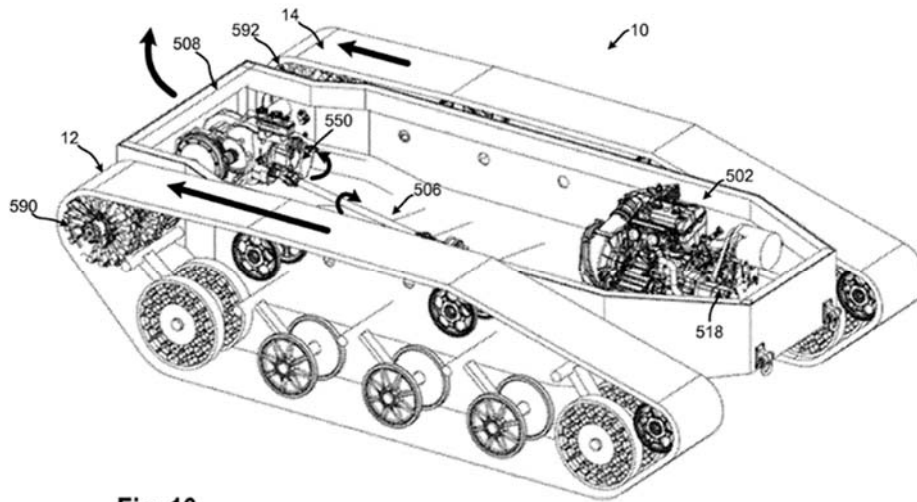


Fig. 16

[EX1017], Bennett-II, p. 22; *see also* Bennet-II, ¶¶ [0048], [0077].

99. Bennett-II only includes generalized statements that its “vehicle 10 may be operated by remote control” ([EX1017, Bennet-II, ¶ [0043]) and in “one embodiment, vehicle 10 is adapted to be remotely controlled. For example, a remote control electronic device may be used to control vehicle 10 wirelessly without an operator being positioned in the vehicle 10” ([EX1017], Bennett-II, ¶ [0121]). Other than these generalized statements, Bennett-II provides no details as to how its remote control is designed or implemented. Additionally, Bennett-II makes no reference to manure, farm lagoons, or animal husbandry (livestock farming).

H. Manure-Manager [EX1019]

100. Manure-Manager appears to be the January/February 2011 issue of an industry publication/newsletter that contains a number of advertisements. *See generally* [EX1019], Manure-Manager. The particular advertisement the Petition appears to rely on depicts one of the Patent Owner's other products, called the "G-Force Vertical Pit Pump."



Petition, p. 96; [EX1019], Manure-Manager, p. 27.

Unlike the amphibious manure agitation vehicle described in the '708 Patent, the Patent Owner's G-Force Vertical Pit Pump is designed as an attachment for an agricultural tractor and is powered by the power-take-off (PTO) of the tractor. As the advertisement in Manure-Manager shows, this piece of equipment is lowered into a manure pit while the tractor is parked along the

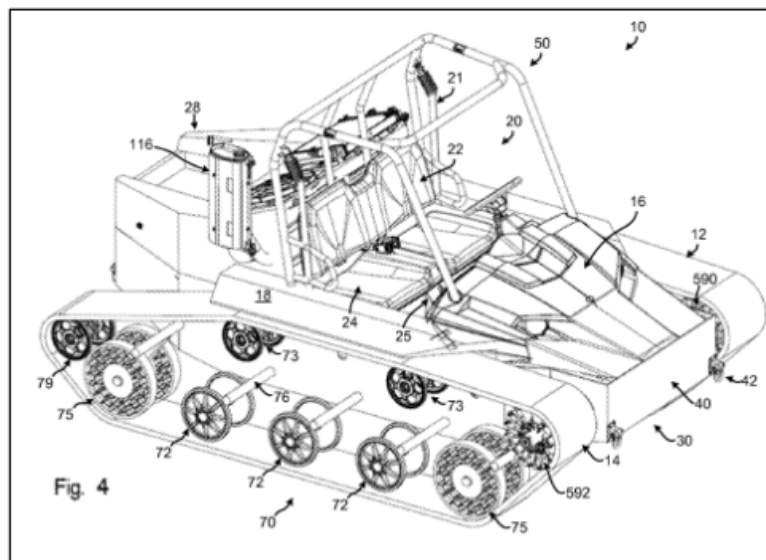
embankment. The “BACKGROUND” section of the ‘708 Patent discusses these types of tractor-powered pumps and explains that they “are typically suitable for accessing the pit or lagoon from its edge and are connected to a tractor or similar land vehicle for operational power” and “are therefore limited in their ability to recirculate manure to the middle of large lagoons.” [EX1001], ‘708 Patent, col. 1, ln. 45-49.

XI. GROUND 1: CLAIM 23 IS NOT ANTICIPATED BY BENNETT-II

101. In the following sections I examine and explain why independent claim 23 of the ‘708 Patent is not anticipated by Bennett-II.

102. Claim 23 of the ‘708 Patent recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel.” In my opinion, this claim element is not disclosed by Bennett-II.

103. Bennett-II discloses a vehicle with tracks:



[EX1017], Bennet-II, p. 5, FIG. 4.

Both the Petitioner and Dr. Winkel concede this point. Petition, p. 36; [EX1004], Winkel Decl., ¶191. Because Bennett-II discloses tracks rather than wheels, Bennett-II does not teach any

structure that a POSITA would consider “a first front wheel and a first rear wheel” or “a second front wheel and a second rear wheel” as required by claim 23.

104. Petitioner and Dr. Winkel appear to take the position that “the load wheels 75” disclosed in Bennett-II satisfy the language of claim 23 requiring “a first front wheel and a first rear wheel” and “a second front wheel and a second rear wheel,” but I disagree. The track-driving load wheels 75 are more commonly known in the art as track driving sprockets. *See, e.g.*, [EX2034], Drive Sprockets and Track Drives.

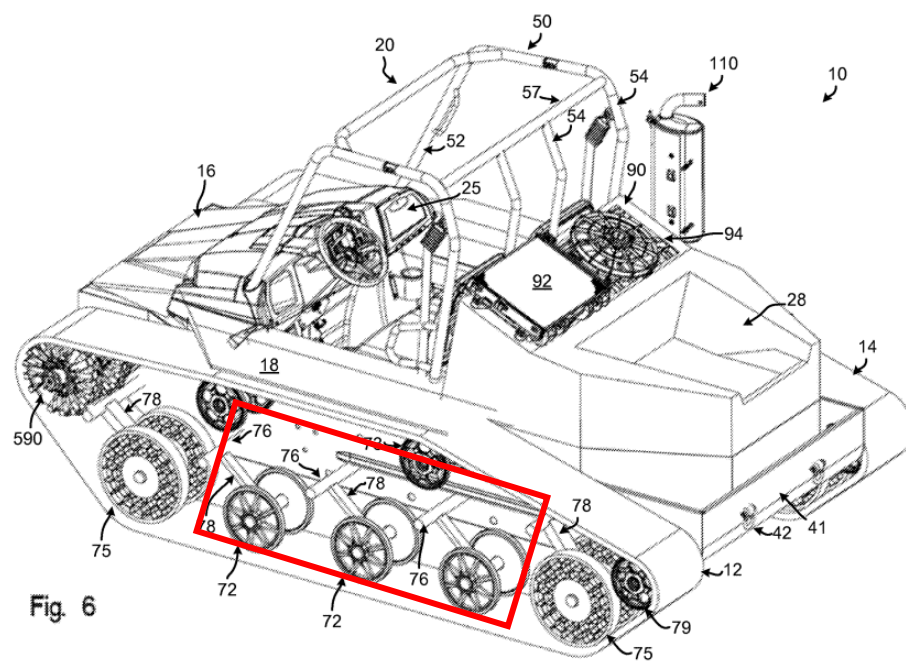
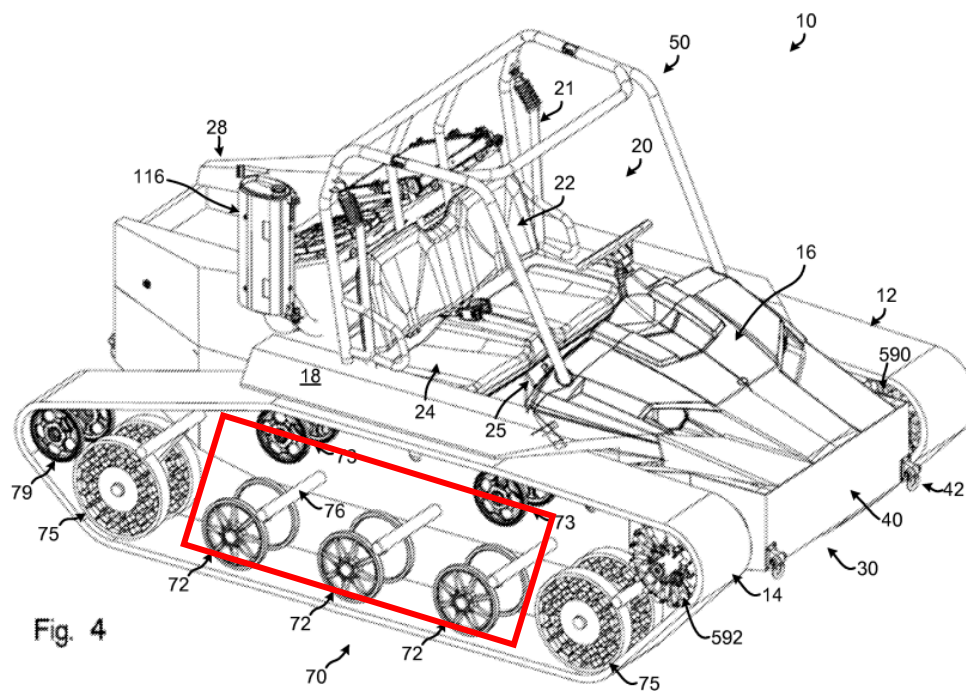
Bennett-II explains that the track driving sprockets / “load wheels 75 are in contact with track members 12, 14.” [EX1017], Bennett-II, ¶63. By contrast, the ‘708 Patent explains that “the ground engaging propulsion structure may comprise an endless track or a set of wheels” and that the wheels are “*ground engaging* elements.” [EX1001], ‘708 Patent, col. 2, ln. 7-11 (emphasis added). In my opinion, a POSITA would not consider the load wheels 75 in Bennett-II as the claimed “a first front wheel and a first rear wheel” and “a second front wheel and a second rear wheel” when they contact the tracks 12, 14 rather than the ground and when the ‘708 Patent explains that the vehicle has either tracks or wheels. In other words, a POSITA would understand claim 23 as covering the wheeled embodiments in view of the claim language reciting “a first front wheel and a first rear wheel” and “a second front wheel and a second rear wheel,” rather than embodiments with an endless track. For this reason, a POSITA would not consider the track equipped vehicle disclosed in Bennett-II to anticipate claim 23.

105. But more significantly, even if Bennett-II is considered as teaching “a first front wheel and a first rear wheel” and “a second front wheel and a second rear wheel,” it does not teach “a floatable vehicle body comprising buoyant elements having foam filled buoyant chambers, the buoyant elements comprising *a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel*” (emphasis added) as required by claim 23.

understand this claim language to require that a buoyant element is positioned in the space between the front wheel and the rear wheel on the each of the right and left sides of the vehicle body.

109. It is unclear whether Bennett-II even discloses foam filled buoyant chambers at the specific locations Petitioner and Dr. Winkel have identified (in green and blue). But even if it does, a POSITA would *not* consider buoyant chambers that are centrally located in the middle of the tub to be situated “between the first front wheel and the first rear wheel” or “between the second front wheel and the second rear wheel” as required by the language of claim 23 because a centrally located buoyant element is not positioned in the space between the front wheel and the rear wheel on either of – much each of – the right and/or left sides of the vehicle body.

110. In other words, to satisfy the claimed arrangement of foam fill buoyant chambers positioned in the space between the front wheel and the rear wheel on the each of the right and left sides of the vehicle body, Bennett-II would need to teach a wheeled alternative to its tracks with foam filled buoyant chambers positioned at the locations shown by the red boxes drawn in the annotated figures below:



EX1017, FIGS 4 and 6 (red annotations added).

But in Bennett-II, there are no foam filled buoyant chambers at the locations identified above in the space between the front wheel and rear wheel on each of the right and left sides of the vehicle body.

111. As a result, Bennett-II does not teach each and every element of claim 23 of the ‘708 Patent.

XII. GROUND 2: CLAIMS 1, 8-18, 21-28 AND 35-38 ARE NONOBVIOUS OVER THE COMBINATION OF TRUXOR IN VIEW OF CARRIER OR YOON

112. In the following sections I examine various claim elements of the ‘708 Patent and explain why at least independent claims 1, 17, 21, and 23 are nonobvious over the combination of Truxor in view of Carrier or Yoon (the “Truxor Combination”). Claims 8-16 depend from claim 1, claims 18-20 depend from claim 17, claim 22 depends from claim 21, claims 24-28 and 35-38 depend from claim 23 and therefore are nonobvious over the Truxor Combination for at least the same reasons.

A. The Truxor Combination Fails to Disclose or Suggest the Liquid Manure Pump Described in Independent Claims 1 and 21

113. Independent claim 1 recites “an impeller in a liquid manure pump, the liquid manure pump comprising a bottom fluid inlet configured to be immersed in the liquid manure when the vehicle is floating, whereby the impeller is configured to draw liquid manure to be pumped through the bottom fluid inlet, the liquid manure pump comprising a housing with the bottom fluid inlet in the housing.” Similarly, independent claim 21 requires “a liquid manure pump comprising a pump housing and an impeller in the pump housing, wherein the impeller is immersed in a liquid manure lagoon when the vehicle is floating in the liquid manure lagoon.” The Truxor Combination fails to teach or suggest these claim limitations.

114. Truxor discloses an amphibious vehicle that is designed to carry an onboard operator and a number of different tool attachments, including aquatic weed cutters ([EX1006],

Truxor, pp. 6-7), rakes ([EX1006], pp. 8-9), buckets and log grabbers ([EX1006], p. 9), dredge pumps ([EX1006], pp. 10-11), excavators ([EX1006], p. 12), cultivators ([EX1006], p. 13), and oil decontamination tools ([EX1006], pp. 14-15).

115. Truxor does not teach or even suggest that the Truxor vehicle and one of its pump attachments pump manure. As a result, Truxor does not disclose “a liquid manure pump” as required by claims 1 and 21.

116. For these reasons, I disagree with Petitioner’s expert, who takes the position that the Doro Pump “provides an increased ability to pump manure.” [EX1004], Winkel Decl., ¶207. This position has zero support in the Truxor literature, which does not teach or suggest using the Doro Pump to pump liquid manure. Instead, Truxor’s documentation clearly states that the Doro pump is designed for pumping light sediments and volatile sand:

The Doro Pump



Page 18

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], Arnoldsson Decl. Ex. H, p. 123 (highlighting added).

117. Petitioner’s expert’s opinion is unsupported and unreliable because Petitioner’s expert has not actually compared the capabilities / technical specifications of the Doro Pump to irrigation or water pumps. Petitioner’s expert has not provided any comparative analysis of the pumping capacity, pumping head, power requirements, tolerances, or other pumping capabilities or characteristics of the Doro Pump compared to irrigation or water pumps or to manure pumps for that matter. In my opinion, this lack of comparative analysis is fatal and makes the opinions of Petitioner’s expert nothing more than unsupported speculation.

118. A POSITA would not take this statement that “[t]he Doro pump is designed for pumping light sediments and volatile sand” ([EX1007], Arnoldsson Decl. Ex. H, p. 123) to mean that the Doro pump would not be prone to clogging in manure pumping applications. Indeed, the Houle reference explains that even powerful centrifugal pumps are prone to clogging when used

to pump manure and explains that “[s]uch devices ... provide limited efficiency when the reservoir contains a thick floating crust or heavy bottom sediments”:

Farm animal manure consists of solid particles in a liquid, and the solid particles either settle on the bottom 25 of the container (as in the case of pig manure) or form a crust over the liquid (as in the case of cow manure) depending on the density of the solid matter and, in some cases, both conditions obtain. Thus, the mass of manure in the container must be thoroughly mixed prior 30 to pumping in order to maintain the solid particles in suspension, otherwise only the liquid matter will be pumped out while the solid matter accumulates in the container. Moreover, such solid matter tends to clog the pump. 35

Hitherto, manure handling pumps consisted of a powerful centrifugal pump disposed near the bottom of the container, the impeller turning about a vertical axis, and a conduit system coupled to the outlet of the pump for 40 either circulating manure within the container or away therefrom into a manure spreader or a different container. The conduit system therefore has a first branch leading out of the container toward another container or toward a tank spreader, and a second branch leading 45 to a suitable nozzle pipe for returning into the container the slurry being mixed. A gate controls the selection of conduit branch in order to either agitate the slurry or pump same out of the reservoir. Examples of such centrifugal systems of which many different designs are 50 currently available from farm equipment manufacturers, are described in U.S. Pat. Nos. 3,905,725 dated Sept. 16, 1975 (R. L. Johnson), 3,446,151, May 27, 1969 (H. G. V. Anderson), 3,456,592, July 22, 1969 (L. L. Nelsen) and 3,966,361, June 29, 1976 (B. L. House). Such devices however provide limited efficiency when 55 the reservoir contains a thick floating crust or heavy bottom sediments. Indeed, the mixing capabilities of centrifugal pump systems are at best limited and time consuming, and no agitation takes place during transfer of the slurry to a different container into a tank 60 spreader. Furthermore, clogging of the pump's impeller and consequential loss of pump efficiency remains a serious shortcoming.

[EX2010], U.S. Pat. No. 4,406,413 to Houle, col. 1, ln. 24-63 (highlighting added).

119. Because the Truxor reference does not teach that the Doro pump is designed and used to pump manure, it is my opinion that a POSITA would not consider the Doro pump to be a “a liquid manure pump” as required by the claims.

120. I disagree with Petitioner's expert, who takes the position that a POSITA would have understood the Doro Pump is "inherently capable of pumping liquid manure and necessarily include[s] an impeller." [EX1004], Winkel Decl., ¶218. This position has zero support in the Truxor literature, which does not teach or suggest using the Doro Pump to pump liquid manure.

121. Because the Truxor reference does not teach that the Doro pump is designed and used to pump manure, it is my opinion that a POSITA would not consider the Truxor vehicle to include the liquid manure pumps described in independent claims 1 and 21.

B. The Truxor Combination Fails to Disclose or Suggest Buoyant Elements Positioned Between the Front Wheel and Rear Wheel on Each Side of the Vehicle as Required by Independent Claims 17, 21, and 23

122. Independent claims 17, 21, and 23 of the '708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel.

123. Claim 17 of the '708 Patent requires "a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel." Similarly, claim 21 specifies that "the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel." And claim 23 recites "a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel."

124. Additionally, independent claim 17 explains that "the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle" and independent claim 21 recites "a first buoyant element on a first *side* of the vehicle body and a second buoyant element on a second *side* of the vehicle body" (emphasis added).

125. In my opinion, these claim elements are not disclosed by the Truxor Combination.

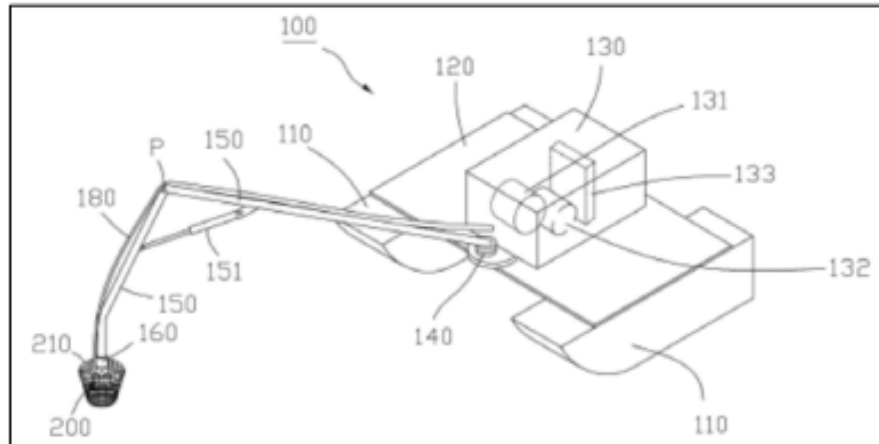
126. Truxor discloses a vehicle with tracks:



[EX1006], Truxor, p. 3. Neither Petitioner nor Dr. Winkel refutes this point. Petition, p. 48, [EX1004], Winkel Decl., ¶215. Because Truxor discloses tracks rather than wheels, Truxor does not teach “a first front wheel and a first rear wheel” or “a second front wheel and a second rear wheel” as required by claims 17, 21, and 23.

127. To make up for this deficiency, Petitioner and Dr. Winkel assert that a POSITA would substitute the vehicle tracks of Truxor for wheels. Petition, p. 48, [EX1004], Winkel Decl., ¶215. But even if a POSITA were so motivated, the resulting combination does not meet the additional requirement of claims 17, 21, and 23, where first and second buoyant elements are positioned in the space between the front wheel and the rear wheel on each of the right and left sides of the vehicle body.

128. To reach the limitations of claims 17, 21, and 23, Petitioner and Dr. Winkel point to the vehicle body of Truxor, which is described as being made of aluminum pontoons, and the pontoons 110 disclosed in Yoon and illustrated below:[EX1011], Yoon, p. 2, FIG. 2. Petitioner and



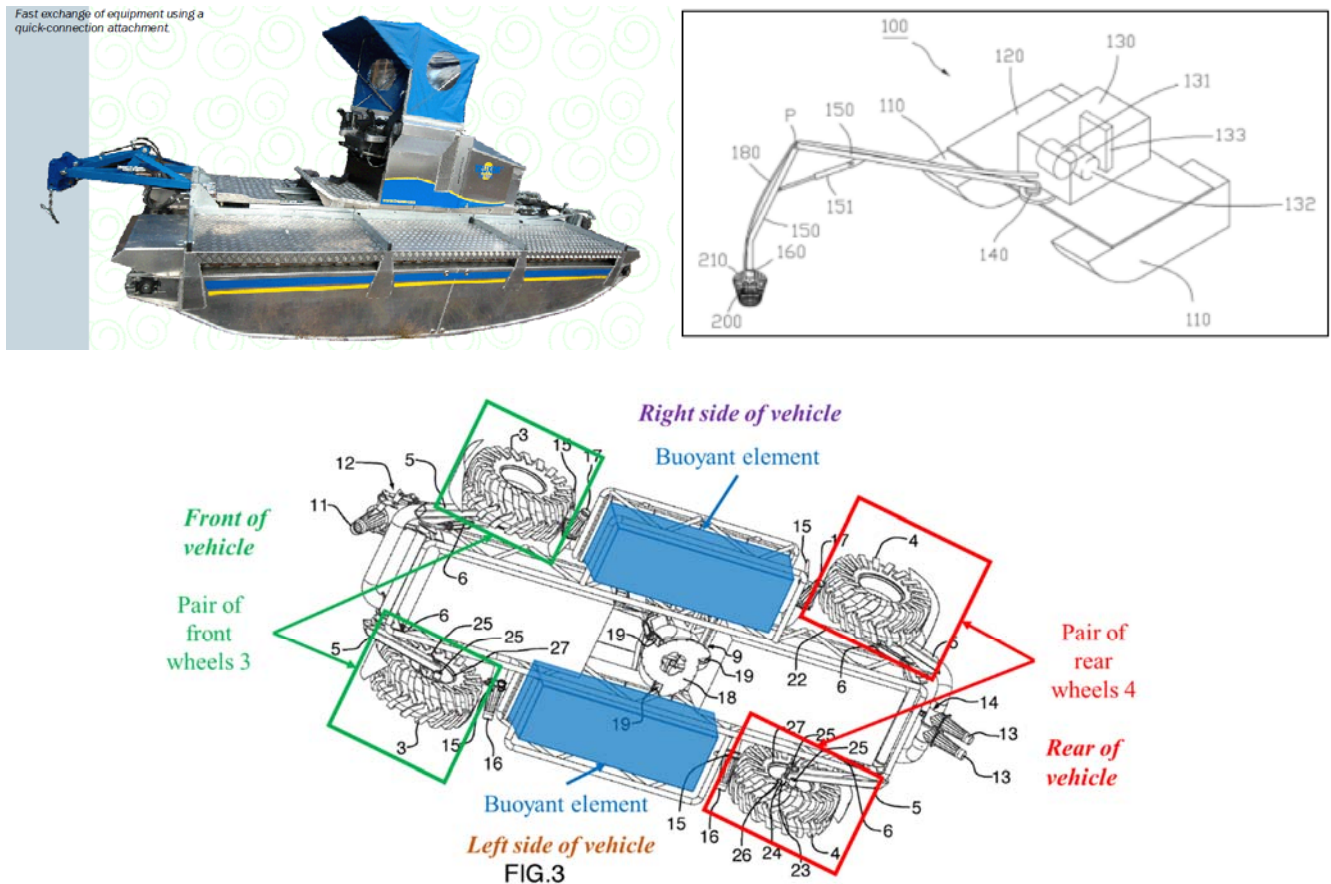
Dr. Winkel then make an unsupported leap that the claimed configuration is obvious, even though it is not disclosed in or suggested by the references themselves:

A POSA would have understood that the natural location in which to arrange the wheels on the vehicle of Truxor would have been to position a pair of wheels toward the front and a pair of wheels toward the rear of the vehicle with each pair of wheels symmetrically arranged with one wheel on either side of the vehicle to promote vehicle stability. This arrangement would result in one pontoon being located between the right pair of wheels and another pontoon being located between the left pair of wheels.

[EX1004], Winkel Decl., ¶215; *see also* Petition, p. 48. I disagree with this conclusion that a POSITA would have understood the claimed arrangement of buoyant elements and wheels to be obvious.

129. According to Petitioner and Dr. Winkel, a POSITA looking to add wheels to the vehicles described in Truxor and Yoon would naturally end up with a vehicle where the pontoons disclosed in Truxor or Yoon are positioned between the front and rear wheels and would therefore

arrive at the claimed arrangement:



[EX1006], Truxor, p. 2; [EX1011], Yoon, p. 2, FIG. 2; [EX1001], '708 Patent, p. 5, FIG. 3 (annotations in color added).

130. But the record does not support the argument that such a modification would be obvious or the “natural location” of the wheels and buoyant elements as Petitioner and Dr. Winkel argue.

131. First, the pontoons disclosed in Truxor and Yoon run the entire length of the vehicle body. So wheels could not be added in front of and behind these pontoons without shortening the pontoons or extending the frame of the vehicle body out beyond the front and rear ends of the pontoons. In either case, the fore and aft stability of the vehicle would be negatively affected, which is why the pontoons in Truxor and Yoon extend entire length of the vehicle body. So a

POSITA would not select the claimed arrangement where buoyant elements are positioned between the front wheel and the rear wheel on each of the right and left sides of the vehicle body as the obvious design choice and in fact would have reasons for selecting other arrangements. The Patent Owner solved fore and aft stability by adding buoyant elements at the front and rear of the vehicle in addition to the buoyant element positioned between the front wheel and the rear wheel on each of the right and left sides of the vehicle body.

132. Second, the record actually demonstrates that if the Truxor vehicle where converted from tracks to wheels, then the “natural location” for the pontoons would be outboard of the wheels rather than between them. The SenwaTec reference ([EX1012], SenwaTec) is instructive, as SenwaTec offered its vehicle in a track-equipped version and a wheeled version. Notably, the wheeled version of the vehicle disclosed in SenwaTec included pontoons installed outboard of the wheels:



A compact muscular vehicle with tracks



6-Wheel driven unit with stabilizer pontoons

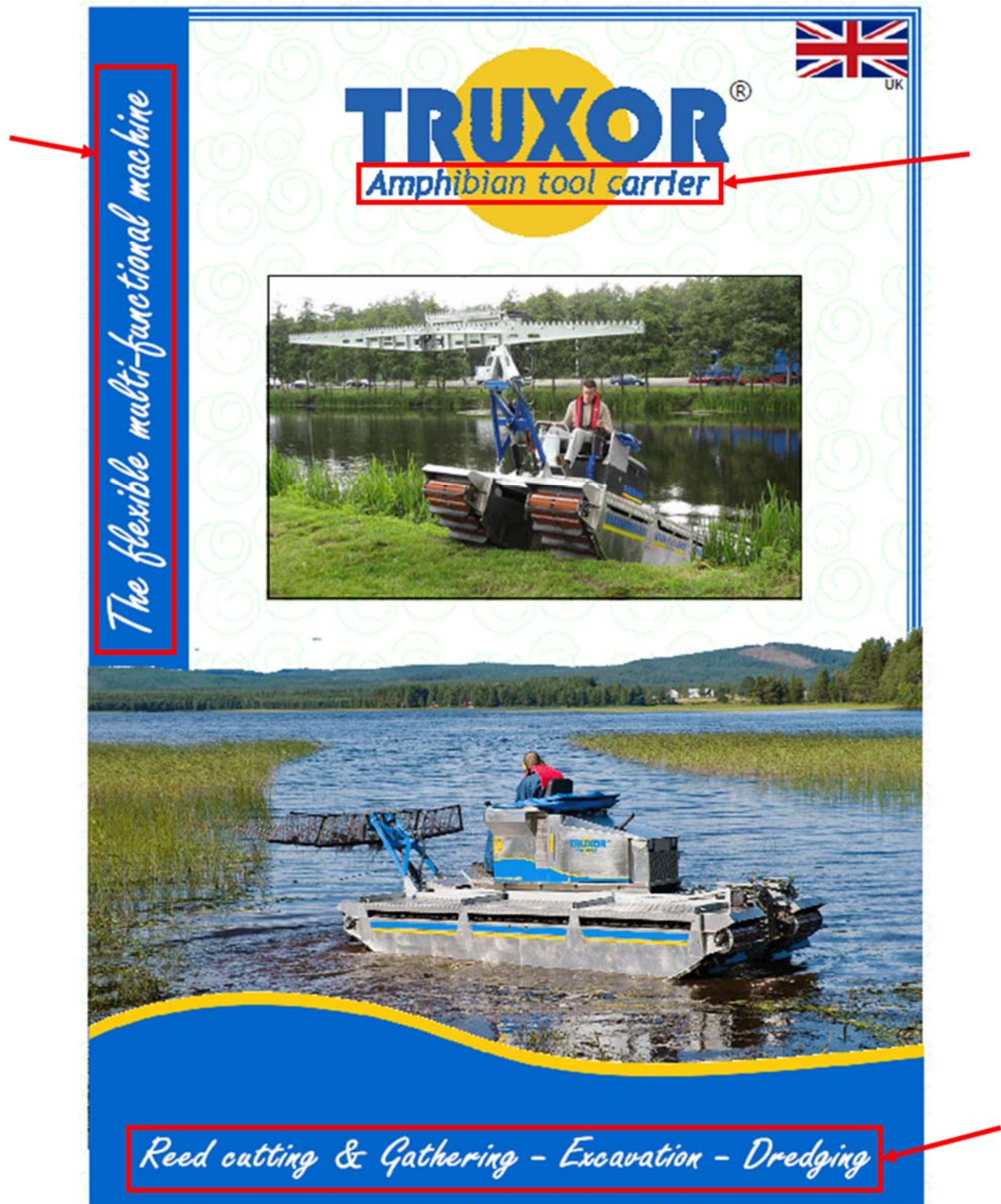
[EX1012], SenwaTec, p. 1. This evidence shows that positioning the pontoons disclosed in Truxor or Yoon outboard of the wheels would be the “natural location” a POSITA would have considered if they were motivated to convert Truxor from tracks to wheels and add buoyant elements to the vehicle. The arrangement of elements that the Petitioner and Dr. Winkel argue impermissibly uses the ‘708 Patent as a blueprint to arrive at the subject matter recited in claims 17, 21, and 23 and is inconsistent with the evidence in the record that shows how others have actually modified their amphibious vehicles.

133. As a result, the Truxor Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17, 21, and 23 of the '708 Patent.

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

134. As explained above, when the claim elements are considered together as a claimed combination, 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.

135. The Truxor marketing brochure ([EX1006], Truxor) does not convey to a POSITA a vehicle that pumps manure. Instead, the Truxor marketing brochure ([EX1006], Truxor, p. 1) describes a manned amphibious vehicle for “Reed cutting & Gathering – Excavation – Dredging”:



[EX1006], Truxor, p. 1 (red annotations added).

136. If a POSITA were to even make a combination of Truxor with Yoon or Carrier,

the result would be an amphibious remote-controlled weed clearing and dredging vehicle – not an amphibious manure lagoon pumping/agitation vehicle. This is not just a difference in the intended application, but a different collection and arrangement of components and systems.

D. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining Truxor With Yoon or Carrier

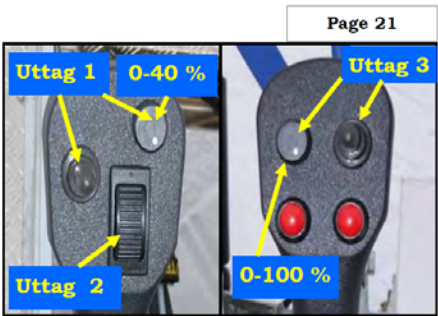
137. The amphibious vehicle disclosed in Truxor and its tool attachments are designed to be operated by an on-board operator. As a result, Truxor fails to teach the limitations of the Claims 1, 17, and 23 that recite “a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the power source; (2) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and (3) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon.” Truxor also fails to teach the limitations of Claim 21 that recite “a wireless remote control configured to enable an operator remote from the vehicle to: (1) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; (2) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon; and, (3) control a flow of liquid manure from the liquid manure pump.”

138. With respect to Ground 2, Petitioner’s expert 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; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

139. Truxor discloses two multi-function joysticks that are used to control the positioning and operation of the submersed pump:

The Doro Pump

The Doro pump is regulated with the help of crossbar switches. The left joystick adjusts the screw feed = socket 1. The rotation can be max. 40 %. The upward and downward movement of the telescope extension is controlled using socket 2 (accessory). The right joystick with socket 3 regulates the rotation speed of the pump, which can be 100 % in most cases.

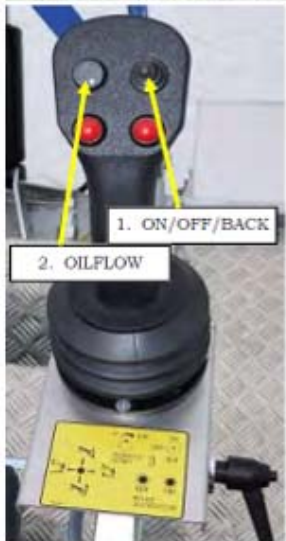


[EX1007], Arnoldsson Decl. Ex. H, p. 126.



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.



Hydraulic-driven tools mounted on Doro Digger require different oil flows.

Socket 3 that determines the oil flow/pressure to the tools is regulated using the right joystick. The switch (1) controls on/off/back.

The knob (2) adjusts the oil flow. Turn the control clockwise to end position for maximum oil flow (100%).

The rotation speed of the diesel motor also affects the maximum flow of the hydraulic pump. Higher rotation speed is required when many hydraulic functions are running at the same time.

Recommended oil flows for the different tools (2):

Doro Pump V380-100 %

Slaghack Orsi 80-100 %

Doro Cutter ESM 1900 40-60 %

Doro Mill50-70 %



[EX1007], Arnoldsson Decl. Ex. H, pp. 128-129 (yellow highlighting added).

140. The difficulties with converting hydraulic controls of this type to wireless remote control would be known to a POSITA. Teleoperation is a term often used when a machine or robot is operated from a distance (aka remote control). The difficulties of operating an excavator-like machine system in a teleoperation type environment lie from delay (latency) in controls, lack of tactile feedback (which is provided through onboard hydraulic controls), and an overload of visual information. [EX2028], Practical Evaluation of a Control Concept, pp. 1, 4-6. The human machine interface (HMI) of hydraulic excavator controls has not evolved much in the last couple of decades and therefore does not lend itself to easily being converted to teleoperation. [EX2025], Excavator Human-Machine Interface Concepts, p. 3. In the 2013-2014 time period, commentators explained that further studies and development was needed to convert these types of manual excavator-like controls to wireless remote-control. [EX2025], Excavator Human-Machine Interface Concepts, p. 8. Further, ASME papers show this was still an area requiring further development and new control systems in 2022. [EX2028], Practical Evaluation of a Control Concept, pp. 1-2, 4-6.

141. Petitioner's expert has not shown how remote control over the various functions of the Truxor vehicle and Doro Pump could be implemented, how a POSITA could overcome these difficulties when making the Truxor Combination, or that the resulting combination would actually work in the manure lagoon environment.

142. Even today, some ten years later, there is no evidence that a remote-control option has been added to the Truxor vehicle. On October 1, 2023, I visited the Truxor website at <https://truxor.com>. I was unable to find any reference to any features or options that indicated remote control of their vehicles is available as an option for their products.

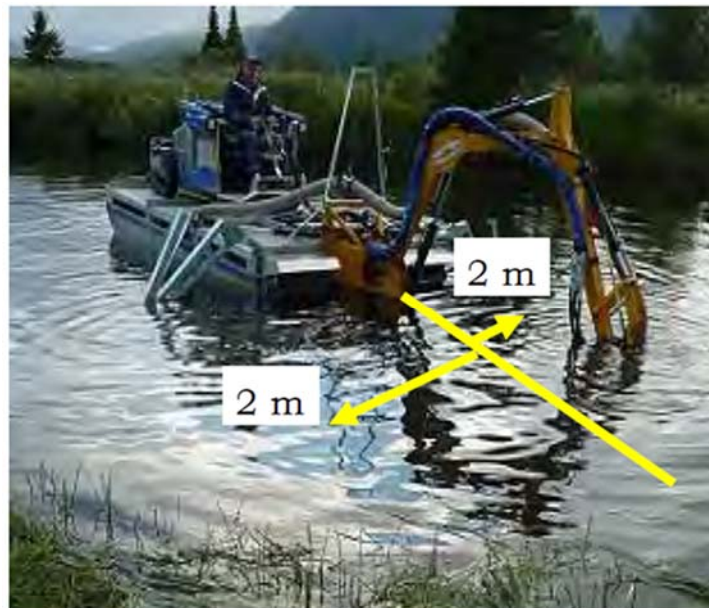
143. On October 2, 2023, I took screenshots from the Truxor website and compiled them as EX2026. I therefore certify that the screenshots shown in EX2026 are true and correct images of the Truxor website identified in the paragraph above. The fact that Truxor has not, to this day, added a remote control option to its vehicles provides evidence that this would not be a simple feat that could be accomplished by routine experimentation.

144. A POSITA would also expect that remotely controlling the positioning and operation of a submerged pump to be problematic given the difficulty observing its operation from a remote location.

145. Truxor's elevated seating position demonstrates the importance of visual observation of the pump located at the end of Truxor's boom arm:



[EX1007], Arnoldsson Decl. Ex. E, p. 60 (red annotations added).



[EX1007], Arnoldsson Decl. Ex H, p128.

146. The vehicle disclosed in SenwaTec is similar to the vehicle disclosed in Truxor, but has a seating position that is below the top deck of the vehicle. As a result, operators of the SenwaTec vehicle were forced to stand to get a better view of the submersed pump:



[EX1012], SenwaTec, p. 2 (red annotations added). 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 from a remote location.

147. Truxor's operator's manual also warns of known "a tilting risk." [EX1007],

Arndolsson Decl. Ex. H, p. 128. In fact, Petitioner’s same expert Dr. Winkel here acknowledged Truxor’s tilting (i.e., rollover) risk in the proceedings for the related ‘835 and ‘425 Patents, as shown below.

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

Bazooka Farmstar, LLC v. Nuhn Industries, Ltd., IPR2024-00004, EX1004, ¶249 (PTAB Oct. 13, 2023) (yellow highlighting added); *see also Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2023-01161, EX1004, ¶257 (PTAB June 23, 2023).

148. This tilting risk would dissuade a POSITA from adding remote control functionality to Truxor 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 might not get hurt if a remote control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. Petitioner’s expert completely overlooks Truxor’s known instability problem from a reasonable expectation of success standpoint.

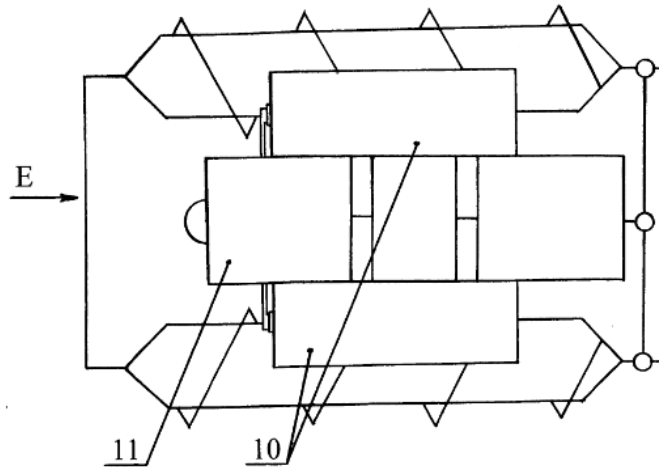
149. Manure lagoons typically have steep embankments that can be covered in manure, mud, sand, and/or ice and are therefore extremely slippery. See [EX1004], Winkel Decl., ¶280 (acknowledging "the problem of launching vessels in area lacking launching infrastructure"). A POSITA would recognize that Truxor's 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.

150. The reliance on Melnikov by Petitioner's expert is also misplaced. Melnikov actually supports my opinion that a POSITA would not have had a reasonable expectation of success in adding wireless remote-control functionality to Truxor because that is not what Melnikov did.

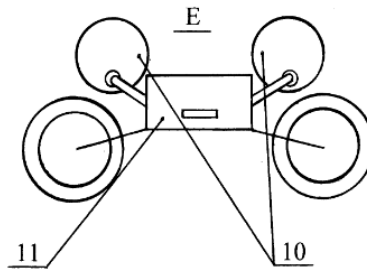
151. Melnikov discusses Truxor in its "Background" section as prior art and notes the drawback that it requires an onboard operator:

Truxor — a multifunctional amphibian machine manufactured by the Swedish company *Dorotea Mekaniska AB* is known (www.doroteamekaniska.se). The amphibian is a pontoon machine on caterpillar tracks operated by one operator. On the machine, an oil skimmer, cultivator, excavator, rakes may be quickly mounted as hydraulic attachments. The machine is easily placed on a trailer, which makes it mobile and reduces transport costs. However, **the disadvantages of the machine may include the presence of an operator located on the machine itself**, which limits the use thereof in conditions dangerous for humans.

[EX1028], Melnikov Trans., p. 4 (highlighting added). Significantly, 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:



Фиг. 11



Фиг. 12

[EX1027], Melnikov, p 7.

152. These major differences continue with Melnikov's pump, which is illustrated as an **onboard** pump for pumping liquid biopreparations and mineral fertilizers from the containers 10 to the spray system 11:

The machine for applying liquid biopreparations and liquid mineral fertilizers includes containers 10 and a pump with a spray system 11 (Fig. 11) mounted on the carrier vehicle.

[EX1028], Melnikov Trans., p. 5 (highlighting added).

153. The device in Melnikov does not pose the same problem as the Truxor Combination, where controlling the positioning and operation of a submerged pump would be problematic given the complexity of the controls and difficulty observing its operation from a remote location.

154. Melnikov clearly knew of the Truxor vehicle and clearly knew that its requirement for an onboard operator was a drawback. If it were both obvious and reasonably feasible to add remote control functionality to Truxor, that is precisely what Melnikov would have done. But Melnikov didn't do that and instead created a device that would be far simpler to operate as a remote-control vehicle.

155. A POSITA would understand that just because *some* vehicles can be remote controlled does not mean that *all* vehicles can be remote controlled. Thus, in my opinion, a POSITA would not have had a reasonable expectation of successfully adding remote-control functionality to Truxor to produce an amphibious remote-controlled vehicle that could operate in a manure lagoon environment without tipping.

E. Petitioner's Combination of Truxor with Carrier or Yoon to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

156. As conveyed above, combining Truxor with Carrier or Yoon to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to Truxor – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to re-design or replace Truxor's Doro *dredge* pump so that it could be effectively used as liquid *manure* pump – even though there is no teaching or suggestion of manure pumping applications in Truxor's literature.
- Second, a POSITA would need to find motivation to replace Truxor's tracks with a front and rear wheel on each side of the vehicle – even though the tracks work just fine for Truxor's purpose.
- Third, a POSITA would need to find motivation to either (a) chop off length from Truxor's pontoons, which run the entire length of the vehicle, to shorten

them or (b) extend the length of the vehicle – all in order to position a pontoon between the new and unnecessary front and rear wheels on each side of the vehicle. And a POSITA would need to do all of this even though the prior art teaches positioning the pontoons outboard of the wheels, which is the most logical solution.

- Fourth, a POSITA would need to find motivation to add wireless remote control to Truxor, even though it would be extremely difficult to convert Truxor’s complex joysticks and hydraulic controls to wireless remote control – only to end up with a pumping vehicle that is difficult if not impossible to control / operate from a remote location due to the inability to observe the positioning of Truxor’s boom arm and therefore the pump.

157. In my opinion, no POSITA would find motivation to take these leaps to arrive at the ’708 Patent’s Challenged Claims. A POSITA would only arrive at the ’708 Patent’s Challenged Claims by using the Challenged Claims as blueprint.

158. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, 21, and 23 are nonobvious over the Truxor Combination.

XIII. GROUND 3: CLAIMS 1, 8-18, 21-28, AND 35-38 ARE NOT OBVIOUS BASED ON SENWATEC IN VIEW OF YOON OR CARRIER

159. In the following sections I examine various claim elements of the ’708 Patent and explain why at least independent claims 1, 17, 21, and 23 are not rendered obvious by SenwaTec in view of Yoon or Carrier (“the SenwaTec Combination”). Claims 8-16 depend from claim 1, claim 18 depends from claim 17, claim 22 depends from claim 2, claims 24-28 and 35-38 depend from claim 23, and are not rendered obvious by the SenwaTec Combination for at least the same reasons.

**A. The SenwaTec Combination Fails to Disclose or Suggest the
Liquid Manure Pump Described in Independent Claims 1 and
21**

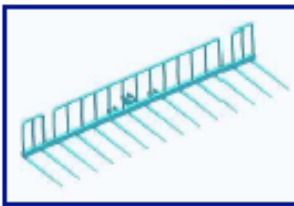
160. Independent claim 1 recites “an impeller in a liquid manure pump, the liquid manure pump comprising a bottom fluid inlet configured to be immersed in the liquid manure when the vehicle is floating, whereby the impeller is configured to draw liquid manure to be pumped through the bottom fluid inlet, the liquid manure pump comprising a housing with the bottom fluid inlet in the housing.” Similarly, independent claim 21 requires “a liquid manure pump comprising a pump housing and an impeller in the pump housing, wherein the impeller is immersed in a liquid manure lagoon when the vehicle is floating in the liquid manure lagoon.” The Truxor Combination fails to teach or suggest these claim limitations.

161. Like Truxor, SenwaTec also discloses an amphibious vehicle that is designed to carry an onboard operator and a number of different tool attachments. In particular, SenwaTec’s marketing brochure ([EX1012], SenwaTec) advertises a number of different attachments that can be installed on the end of its vehicle’s excavator arm (boom arm), including weed cutter-bars, rakes, mowing buckets, excavating buckets, tree cutters, and dredge pumps:

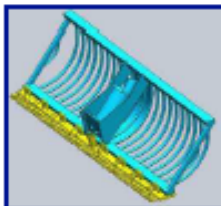
Available working tools and attachment units:



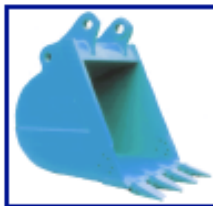
T-Shaped Cutter-Bar



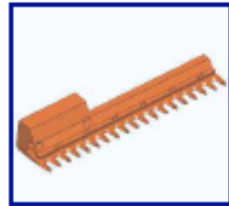
Clearing & Collecting Rake



Mowing Bucket



Excavating Bucket



Tree Cutter



Equipped with suction auger for sludge



Suction an pumping of swimming algae and weeds

Working units:	❖ T-Cutter bar, Clearing & collecting – rake (also available with fine screen) Excavating bucket, Centrifugal pump with HARDOX inner casing, 6" suction x 6" discharge, Tree cutter, Tree saw (check with factory), Mowing bucket
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[EX1012], SenwaTec, pp. 2-3.

162. There is no reference to manure, farm lagoons, or animal husbandry (livestock farming) in SenwaTec’s marketing brochure ([EX1012], SenwaTec) nor does this brochure teach or suggest that the SenwaTec vehicle and one of its pump attachments are used to pump manure.

163. Nor would a POSITA consider the centrifugal pumps disclosed in SenwaTec to be a “liquid manure pump” based on the information provided in SenwaTec’s marketing brochure [EX1012]. Indeed, the Houle reference explains that even powerful centrifugal pumps are prone to clogging when used to pump manure and explains that “[s]uch devices however provide limited efficiency when the reservoir contains a thick floating crust or heavy bottom sediments”:

Farm animal manure consists of solid particles in a liquid, and the solid particles either settle on the bottom of the container (as in the case of pig manure) or form a crust over the liquid (as in the case of cow manure) depending on the density of the solid matter and, in some cases, both conditions obtain. Thus, the mass of manure in the container must be thoroughly mixed prior to pumping in order to maintain the solid particles in suspension, otherwise only the liquid matter will be pumped out while the solid matter accumulates in the container. Moreover, such solid matter tends to clog the pump.

Hitherto, manure handling pumps consisted of a powerful centrifugal pump disposed near the bottom of the container, the impeller turning about a vertical axis, and a conduit system coupled to the outlet of the pump for either circulating manure within the container or away therefrom into a manure spreader or a different container. The conduit system therefore has a first branch leading out of the container toward another container or toward a tank spreader, and a second branch leading to a suitable nozzle pipe for returning into the container the slurry being mixed. A gate controls the selection of conduit branch in order to either agitate the slurry or pump same out of the reservoir. Examples of such centrifugal systems of which many different designs are currently available from farm equipment manufacturers, are described in U.S. Pat. Nos. 3,905,725 dated Sept. 16, 1975 (R. L. Johnson), 3,446,151, May 27, 1969 (H. G. V. Anderson), 3,456,592, July 22, 1969 (L. L. Nelsen) and 3,966,361, June 29, 1976 (B. L. House). Such devices however provide limited efficiency when the reservoir contains a thick floating crust or heavy bottom sediments. Indeed, the mixing capabilities of centrifugal pump systems are at best limited and time consuming, and no agitation takes place during transfer of the slurry to a different container into a tank spreader. Furthermore, clogging of the pump's impeller and consequential loss of pump efficiency remains a serious shortcoming.

[EX2010], U.S. Pat. No. 4,406,413 to Houle, col. 1, ln. 24-63 (highlighting added).

164. In view of this background knowledge and the fact that the SenwaTec reference itself does not teach that its centrifugal pumps are designed and used to pump manure, a POSITA would not consider these pumps to be a “liquid manure pump” as required by the claims.

B. The SenwaTec Combination Fails to Disclose or Suggest Buoyant Elements Positioned Between the Front Wheel and

**Rear Wheel on Each Side of the Vehicle as Required by
Independent Claims 17, 21, and 23**

165. Independent claims 17, 21, and 23 of the '708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel.

166. Claim 17 of the '708 Patent requires “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.” Similarly, claim 21 specifies that “the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel.” And claim 23 recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel.”

167. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle” and independent claim 21 recites “a first buoyant element on a first *side* of the vehicle body and a second buoyant element on a second *side* of the vehicle body” (emphasis added).

168. In my opinion, these claim elements are not disclosed by the SenwaTec Combination.

169. Petitioner and Dr. Winkel incorrectly state that “SenwaTec discloses that the metal stabilizer pontoons are situated between the front and rear wheels on each side of the vehicle.” Petition, p. 65, [EX1004], Winkel Decl., ¶255. The image copied below from the SenwaTec reference ([EX1012], SenwaTec, p. 1), which is found in the above identified sections of the Petition and the Winkel declaration, clearly depicts pontoons that are installed outboard of the wheels:



6-Wheel driven unit with stabilizer pontoons

[EX1012], SenwaTec, p. 1. There is simply no disclosure in SenwaTec that the stabilizer pontoons are situated between the front and rear wheels on each side of the vehicle as Petitioner and Dr. Winkel claim.

170. As a result, the SenwaTec Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17, 21, and 23 of the '708 Patent.

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

171. As explained above, when the claim elements are considered together as a claimed combination, 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.

172. SenwaTec's marketing brochure ([EX1012], SenwaTec) prominently advertises at the top of the first page its expertise in the following areas "Ditch Cleaner And Slope Mowers,"

“Moving and Clearing Boats,” “Weed Harvesters,” “Amphibious Vehicles,” and “Cutter Suction And Excavating Dredges”:



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

SCHRÖER ENVIRONMENT AND WATER TECHNOLOGY

Light Amphibious Boat/Vehicle

“Amphi-King®” SWT-AB380

- ❖ Light and strong aluminum construction, approximately 2480 kg (5,500 lbs.), without attachments
- ❖ 6-wheel drive or track drive system (track drives are patented system)
- ❖ Forward crane ready for many attachments with available power for up to 50 KW (67 HP)
- ❖ Heavy duty Diesel engine certified to the latest standards of Tier IV emission and fuel consumption
- ❖ Optimal configuration of power requirements and hydraulic unit (less operating costs)
- ❖ Low ground pressure and good clearance on terrain, marches and swamps during on-land drives
- ❖ Shallow vessel draft with, low center of gravity for safe on-water maneuvering
- ❖ High working range and wide swing radius of the hydraulic crane arm, ready for many attachments
- ❖ Operating controls conveniently placed and adjustable to suite operator’s seat position
- ❖ Vehicle construction & safety configuration according to European & International standards



A compact muscular vehicle with tracks
With a powerful centrifugal pump and 8” suction- and 6” discharge ports, hydraulically driven, delivering 40 kW of pumping power

6-Wheel driven unit with stabilizer pontoons
With a powerful centrifugal pump and 8” suction- and 6” discharge ports, hydraulically driven, delivering 40 kW of pumping power



- Ergonomic arrangement of the operating and monitoring elements

-A compact transport package on the tilt deck trailer

[EX1012], SenwaTec, p. 1 (red annotations added).

173. If a POSITA were to even make a combination of SenwaTec with Yoon or Carrier, the result would be an amphibious remote-controlled weed clearing and dredging vehicle – not an amphibious manure lagoon agitation/pumping vehicle. This is not just a difference in the intended application, but a different collection and arrangement of components and systems.

D. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining SenwaTec With Yoon or Carrier

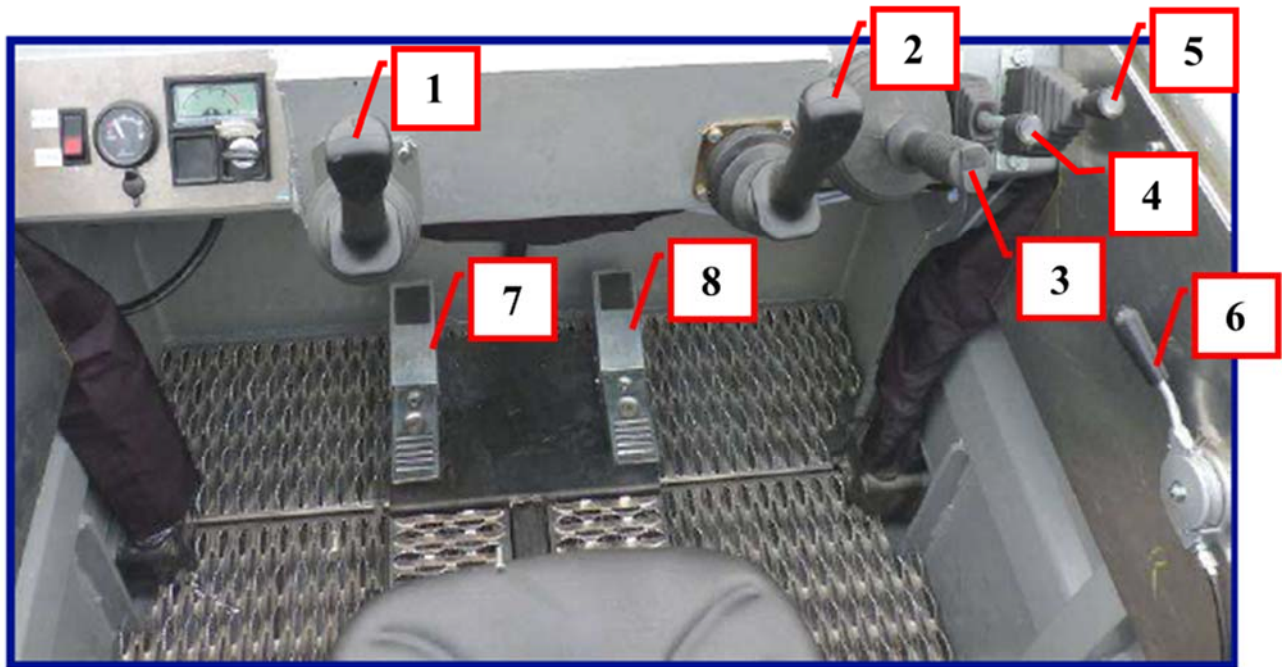
174. The amphibious vehicle disclosed in SenwaTec and its tool attachments are designed to be operated by an on-board operator. As a result, SenwaTec fails to teach the limitations of the Challenged Claims 1, 17, and 23 that recite “a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the power source; (2) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (3) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon.” SenwaTec also fails to teach the limitations of the Challenged Claim 21 that recite “a wireless remote control configured to enable an operator remote from the vehicle to: (1) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; (2) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon; and, (3) control a flow of liquid manure from the liquid manure pump.”

175. With respect to Ground 3, Petitioner’s expert 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; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

176. Petitioner’s expert has not shown whether SenwaTec’s manual controls lend themselves to remote control, how remote control over the various functions could be

implemented, or that the resulting combination would actually work in the manure lagoon environment.

177. In my opinion, SenwaTec's manual controls depend on an onboard operator and close proximity observation of the submersed pump. As shown in the photograph below, the vehicle disclosed in SenwaTec has at least 8 different control interfaces – 5 separate joysticks, 2 foot pedals, and 1 hand-lever:



[EX1012], SenwaTec, p. 1 (numerical annotations added).

178. The difficulties with converting hydraulic controls of this type to wireless remote control would be known to a POSITA. Teleoperation is a term often used when a machine or robot is operated from a distance (aka remote control). The difficulties of operating an excavator-like machine system in a teleoperation type environment lie from delay (latency) in controls, lack of tactile feedback (which is provided through onboard hydraulic controls), and an overload of visual information. [EX2028], Practical Evaluation of a Control Concept, pp. 1, 4-6. The human machine interface (HMI) of hydraulic excavator controls has not evolved much in the last couple of decades and therefore does not lend itself to easily being converted to teleoperation. [EX2025], Excavator

Human-Machine Interface Concepts, p. 3. In the 2013-2014 time period, commentators explained that further studies and development was needed to convert these types of manual excavator-like controls to wireless remote-control. [EX2025], Excavator Human-Machine Interface Concepts p. 8. Further, ASME papers show this was still an area requiring further development and new control systems in 2022. [EX2028], Excavator Human-Machine Interface Concepts, pp. 1-2, 4-6.

179. Petitioner's expert has not shown or even attempted to explain how remote control over the various functions could be implemented, how a POSITA could overcome these difficulties when making the SenwaTec combination, or that the resulting combination would actually work in the manure lagoon environment.

180. Even today, some ten years later, there is no evidence that a remote-control option has been added to the SenwaTec vehicle. On October 4, 2023, I visited the Berky website at <https://www.berky.de/en>. I understand from the Declaration of Ansgar Lonnemann ([EX1013], Lonnemann Decl.) that Berky purchased SenwaTec. In particular, the Berky Nereus 240 AMPHI appears to correspond to the SenwaTec amphibious vehicle depicted in EX1012. I was unable to find any reference to any features or options that indicated remote control of Berky's vehicles is available as an option for their products.

181. On October 4, 2023, I took screenshots from the Berky website and compiled them as EX2027. I therefore certify that the screenshots shown in EX2027 are true and correct images of the Berky website identified in the paragraph above. The fact that SenwaTec/Berky has not, to this day, added a remote control option to its vehicles provides evidence that this would not be a simple feat that could be accomplished by routine experimentation.

182. For these reasons, it is my opinion that a POSITA would not expect SenwaTec's controls to easily lend themselves to remote control.

183. 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.

184. Photographs in SenwaTec's marketing brochure ([EX1012], SenwaTec) 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 in these photographs:





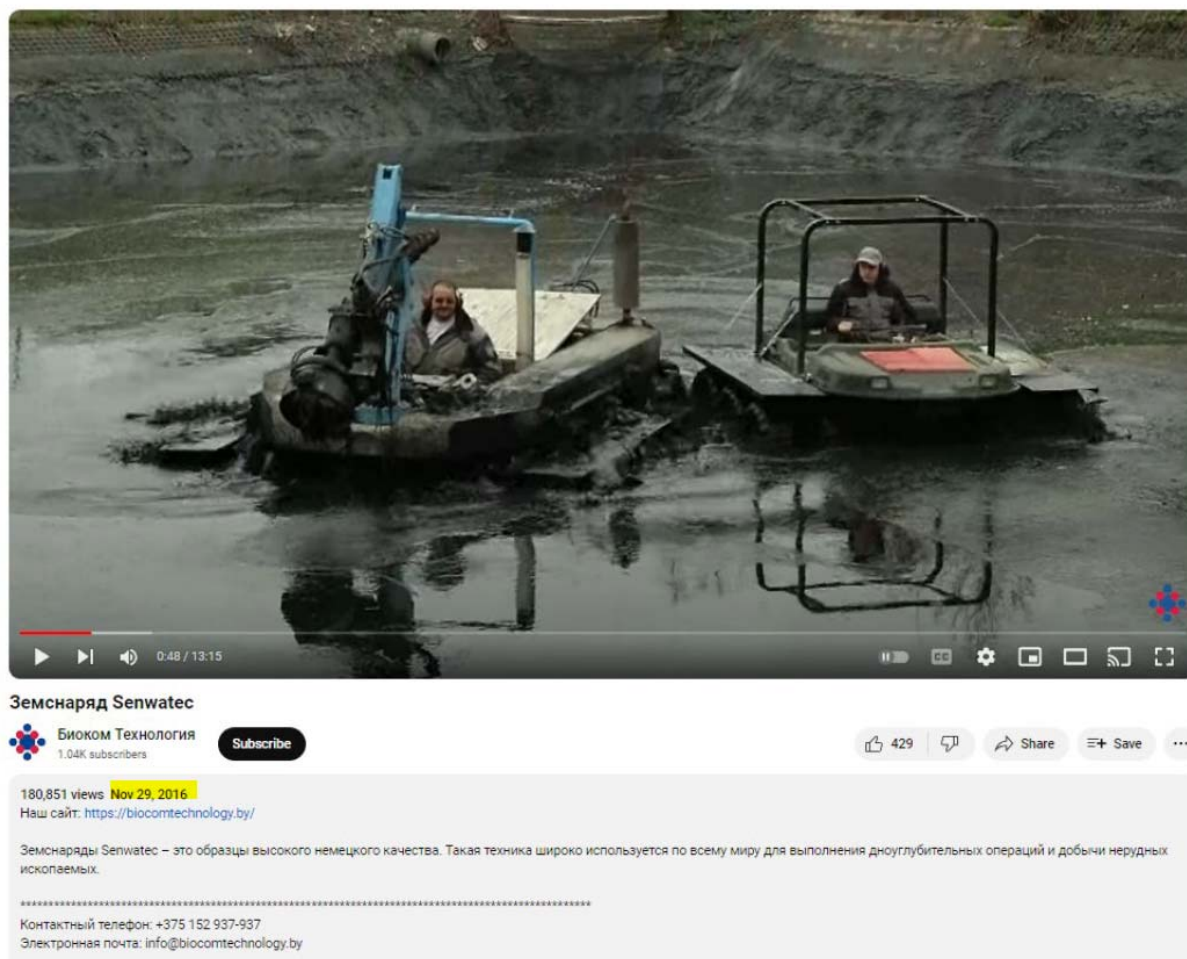
[EX1012], SenwaTec, p. 2 (red annotations added). This reinforces what a POSITA would readily appreciate – it would be difficult if not impossible to control and operate this type of vehicle and pump from a remote location.

185. Petitioner's expert also fails to address another problem that a POSITA would expect if they attempted to add remote control functionality to SenwaTec – remote control increases the likelihood of a rollover.

186. One of the video screenshots in Exhibit B to the Lonnemann Declaration illustrates that SenwaTec's vehicle has a rollover risk, much like the Truxor vehicle:



[EX1013], Lonnemann Decl., p. 14. On January 15, 2024, I personally accessed and viewed this video showcasing the SenwaTec vehicle, which is posted on YouTube at the following link: <https://www.youtube.com/watch?v=ecnlfMf7CH4&t=1s>. On January 15, 2024, I took a screenshot of this YouTube video of the SenwaTec vehicle and included it in [EX2032. I therefore certify that the screenshot shown in EX2032 and reproduced below is a screenshot from YouTube of the video whose URL link is identified above.



[EX2032], SenwaTec YouTube Video Screenshots, p. 1. The YouTube website indicates that this video was posted on November 29, 2016.

187. Manure lagoons typically have steep embankments that can be covered in manure, mud, sand, and/or ice and are therefore extremely slippery. In my opinion, a POSITA would expect the instability issues with the SenwaTec vehicle to 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 might not get hurt if a remote control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. This tilting risk would dissuade a POSITA from adding remote control functionality to SenwaTec.

188. As a result, a POSITA would not have had a reasonable expectation that adding remote control functionality to SenwaTec would be successful in achieving the claimed invention - an amphibious remote-controlled manure agitation vehicle that has to traverse steep and slippery embankments while entering and exiting manure lagoons.

E. Petitioner's Combination of SenwaTec with Carrier or Yoon to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

189. As conveyed above, combining SenwaTec with Carrier or Yoon and further to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to SenwaTec – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to re-design or replace SenwaTec's *dredge* pump so that it could be effectively used as a liquid *manure* pump – even though there is no teaching or suggestion of a *manure* pumping applications in SenwaTec's literature.
- Second, a POSITA would need to find motivation to relocate SenwaTec's stabilizer pontoons – which are outboard of SenwaTec's wheel – to be positioned between the front and rear wheel on each side of the vehicle, which is nonsensical given that the stabilizer pontoons would have to be dramatically shortened to allow the stabilizer pontoons to be positioned between the wheels on each side of the vehicle and would provide less stability by virtue of being

made smaller and being positioned closer to the centerline of the vehicle. And a POSITA would need to do all of this even though stabilizer pontoons are already positioned at their most natural location.

- Third, a POSITA would need to find motivation to add wireless remote control to SenwaTec, even though it would be extremely difficult to convert SenwaTec's myriad of joysticks and foot controls to wireless remote control – only to end up with a pumping vehicle that is difficult if not impossible to control / operate from a remote location due to the inability to observe the positioning of SenwaTec's boom arm and therefore the pump.

190. In my opinion, no POSITA would find motivation to take these leaps to arrive at the '708 Patent's Challenged Claims. A POSITA would only arrive at the '708 Patent's Challenged Claims by using the Challenged Claims as blueprint.

191. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, 21, and 23 are nonobvious over the SenwaTec Combination.

XIV. GROUND 4: CLAIMS 1, 8-18, 23-28, AND 35-38 ARE NOT OBVIOUS BASED ON PUCK IN VIEW OF BRYHAM

192. In the following sections, I examine various claim elements of the '708 Patent and explain why at least independent claims 1, 17, and 23 are not rendered obvious by Puck in view of Bryham ("the Puck-Bryham Combination"). Claims 8-16 depend from claim 1, claim 18 depends from claim 17, claims 24-28 and 35-38 depend from claim 23 and are not rendered obvious by the Puck-Bryham Combination for at least the same reasons.

A. The Puck-Bryham Combination Fails to Disclose or Suggest the Liquid Manure Pump Described in Independent Claim 1

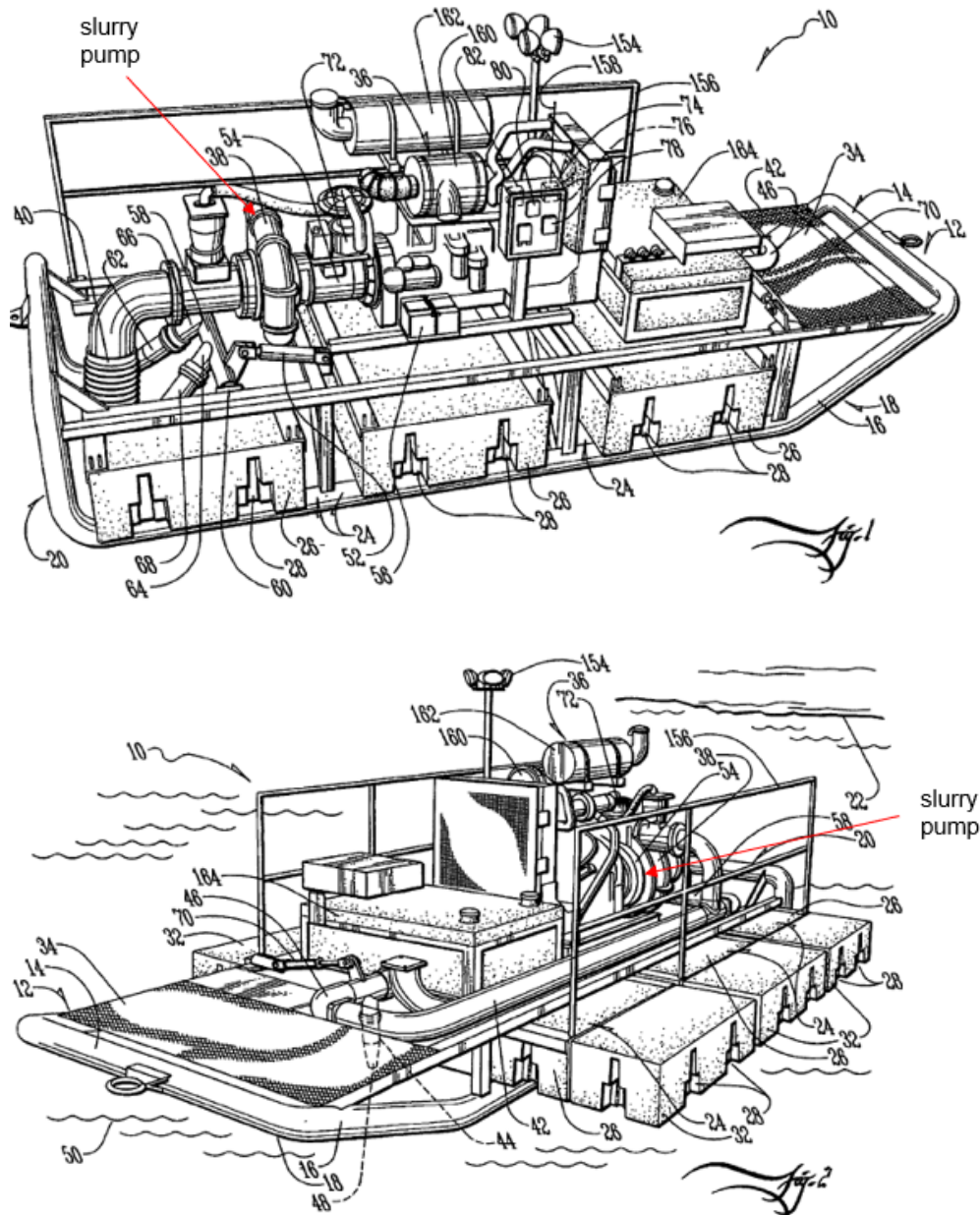
193. Independent claim 1 requires "an impeller in a liquid manure pump, *the liquid manure pump comprising a bottom fluid inlet configured to be immersed in the liquid manure when the vehicle is floating*, whereby the impeller is configured to draw liquid manure to be

pumped through the bottom fluid inlet, *the liquid manure pump comprising a housing with the bottom fluid inlet in the housing*” (emphasis added). Bryham does not disclose a liquid manure pump at all, and Puck fails to disclose a liquid manure pump that satisfies the claim language italicized above.

194. Neither Puck nor Bryham discloses a vehicle with a liquid manure pump that is configured to be immersed in liquid manure when the vehicle is floating.

195. As shown in Figs. 1 and 2 of Puck, which are annotated below, the slurry pump 38 disclosed in Puck is mounted high in the vessel hull and is therefore not immersed in the liquid

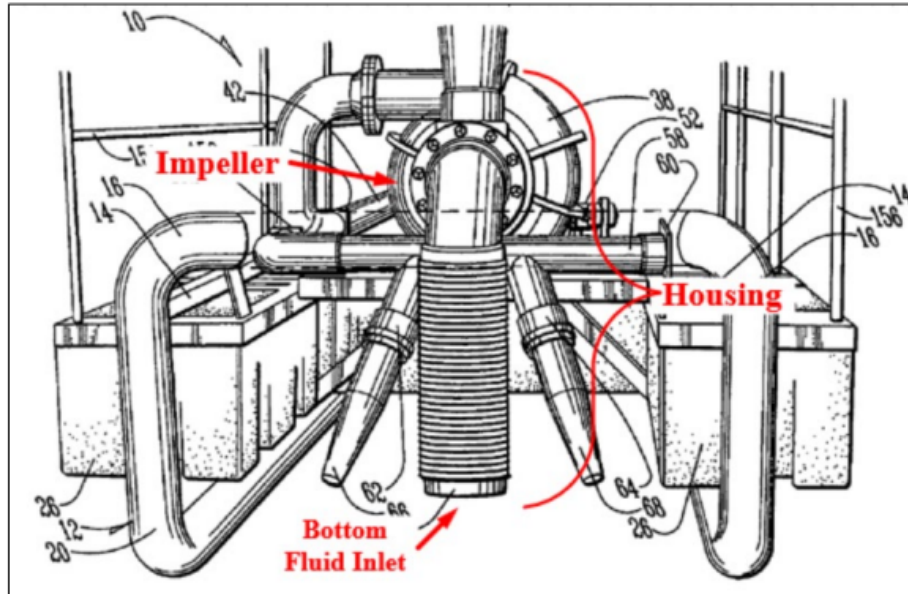
manure when the vehicle is floating:



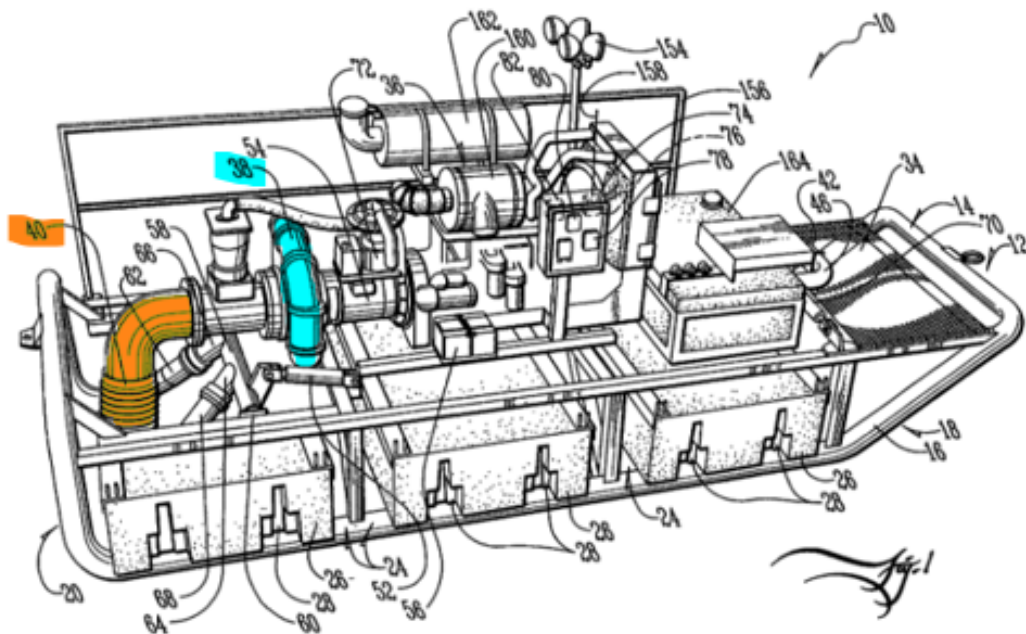
EX1014, FIGS. 1 and 2 (slurry pump annotations added).

196. In an attempt to invalidate claim 1, Petitioner and Dr. Winkel make a structurally inaccurate argument that the inlet of the pump housing in Puck is configured to be immersed in the liquid manure when the vehicle is floating. As shown below in the annotated figure below, which comes from page 79 of the Petition and paragraph 291 of Dr. Winkel's Declaration

[EX1004], Petitioner and Dr. Winkel argue that the “housing” of the liquid manure pump 38 disclosed in Puck also includes the “intake pipe 40”:



Petition, p. 79 (annotations added by Petitioner). But as shown in Fig. 1 of Puck, which is annotated below, the intake pipe 40 is a separate component that is not part of the housing of the liquid manure pump 38:



[EX1014], Puck, p. 12, FIG. 1 (annotations added in orange and blue).

197. The written description in Puck further demonstrates that the Petitioner's position is untenable. For example, Paragraph [0026] of Puck describes the slurry pump 38 as being "coupled to" the downwardly directed intake pipe 40 and that intake pipe 40 may be extensible:

[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.

[0026] The slurry pump (38) is coupled to a liquid manure intake, such as a slurry intake, which is a downwardly directed intake pipe (40) in the preferred embodiment and is capable of handling manure crust, supernatant, sludge and the combined slurry. (FIGS. 1 and 4). If desired, the intake pipe (40) may be extensible to adjust the depth of the intake pipe (40). The intake pipe (40) is constructed to extend about twenty-four inches below the surface of the lagoon (22), but may be extended or retracted to any desired depth, including the entire depth of the lagoon (22).

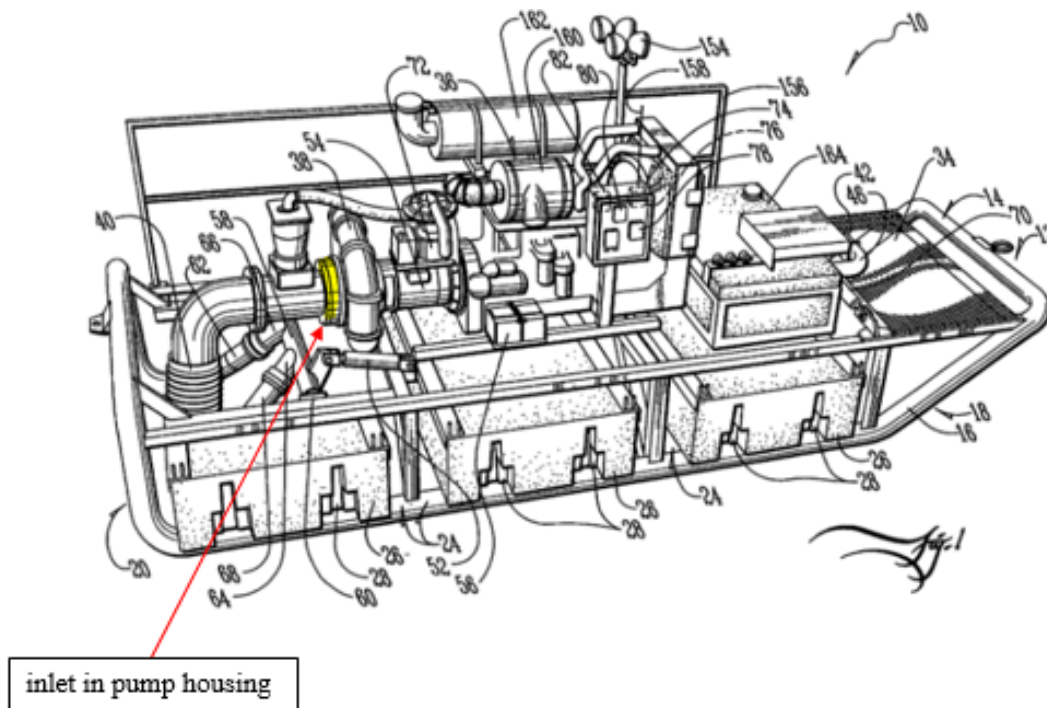
[0027] Coupled to the slurry pump (38) by a transport pipe (42) is a first slurry output (44). (FIG. 5). The first slurry output (44) is an angled pipe (46) pivotably coupled to the transport pipe (42). Releasably coupled to the angled pipe (46) is a tapered liquid manure nozzle (48) to increase the velocity of slurry (50) passing through the nozzle (48). (FIGS. 4-5). If desired, different sizes and configurations of nozzles (48) may be coupled to the angled pipe (46) to adjust the direction and velocity of slurry (50) exiting through the first slurry output (44). Coupled between the angled pipe (46) and the frame (14) is a steering control hydraulic cylinder (52). The hydraulic cylinder (52) is coupled to a hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56). (FIGS. 1 and 5).

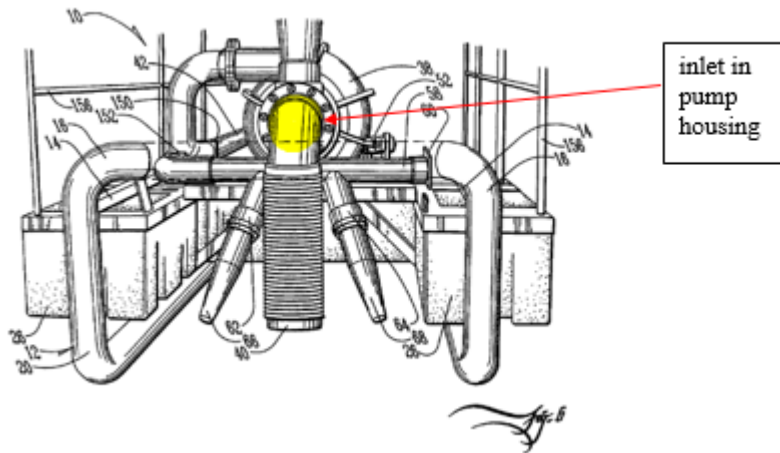
[EX1014], Puck, ¶25 (highlighting added). The "intake pipe 40" is no more a part of the slurry pump 38 than the "transport pipe 42," which is also described as being "coupled to" the slurry pump 38. In view of this disclosure, a POSITA would not consider the intake pipe 40 of Puck to be part of the "housing" of the liquid manure pump 38 and therefore would not understand Puck to teach a "liquid manure pump comprising a *bottom* fluid inlet configured to be immersed in the liquid manure when the vehicle is floating" or "a housing with the bottom fluid inlet *in the*

housing” as required by claim 1 of the ‘708 Patent.

198. Because the language of claim 1 requires “the bottom fluid inlet” to be “in the housing,” a POSITA would not consider the inlet at the bottom of the intake pipe 40 to be “a bottom fluid inlet” of the slurry pump 38 itself because that inlet is not “in the housing” of the slurry pump 38, but a separate conduit altogether.

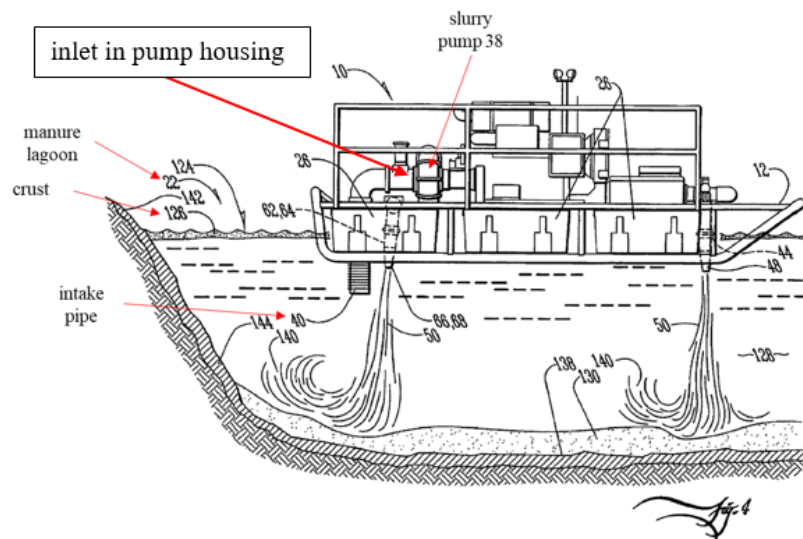
199. Instead, a POSITA would understand Puck to disclose a slurry pump 38 with an inlet that is positioned in the *rear side* of the pump housing:





[EX1014], Puck, pp. 2, 7, FIGS. 1 and 6 (pump housing annotations added).

A POSITA would not consider this inlet in Puck's pump housing 38 to be "a *bottom* fluid inlet" as required by the language of claim 1 because it is not positioned at the *bottom* of the slurry pump 38 and it is not "configured to be immersed in the liquid manure when the vehicle is floating." Instead, the inlet in Puck's pump housing 38 is positioned above the "waterline" when the vehicle is floating. As shown in Figure 4 of Puck (reproduced below), the pump housing and rear inlet of the slurry pump 38 is designed to be above the surface of the manure lagoon 22 and crust 126 during operation.



[EX1014], Puck, p. 5, FIG. 4 (annotations added).

200. Bryham does not cure this deficiency as it does not disclose a liquid manure pump at all.

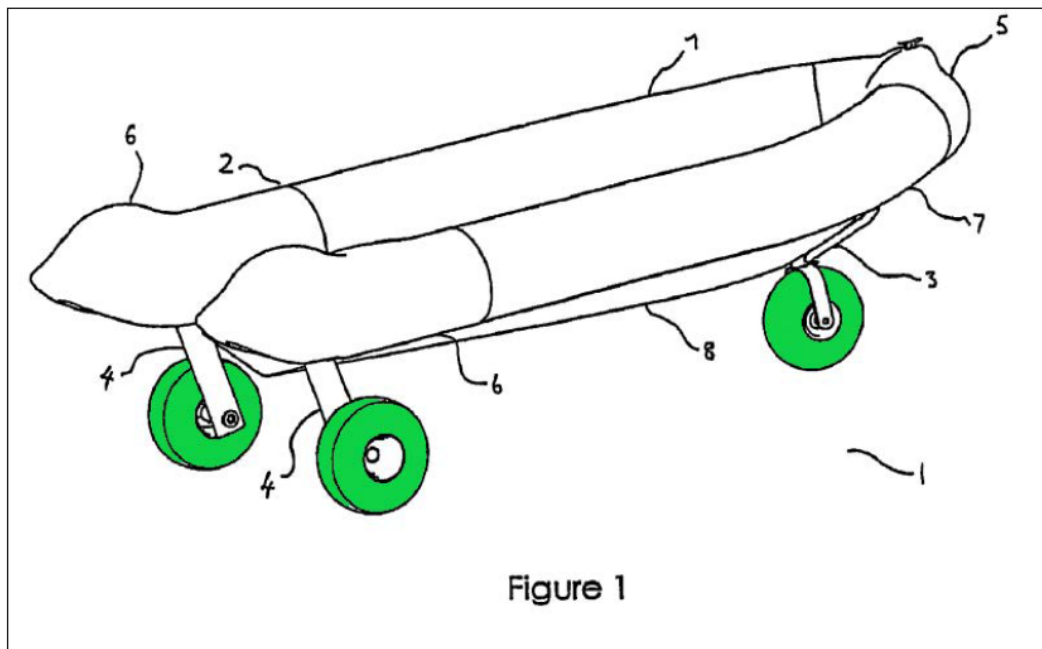
B. The Puck-Bryham Combination Fails to Disclose the Arrangement of Buoyant Elements Situated Between Front and Rear Wheels on Each Side of the Vehicle as Required by Independent Claims 17 and 23

201. Claim 17 of the '708 Patent requires "a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel." Similarly, claim 23 recites "a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel."

202. Additionally, independent claim 17 explains that "the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle" (emphasis added).

203. In my opinion, these claim elements are not disclosed by the Puck-Bryham Combination.

204. The vehicle disclosed in Puck is a manure agitation boat. Therefore, Puck's vehicle lacks ground engaging propulsion structure such as front and rear wheels. As a result, Petitioner and Dr. Winkel assert that a POSITA would add Bryham's wheels to the manure agitation boat disclosed in Puck. Petition, pp. 76; [EX1004], Winkel Decl., ¶276. But what the Petitioner and Dr. Winkel suggest is not a simply plug-and-play substitution. As shown below, Bryham discloses a three-wheeled arrangement, where a single, steerable wheel is provided at the bow of the boat hull:



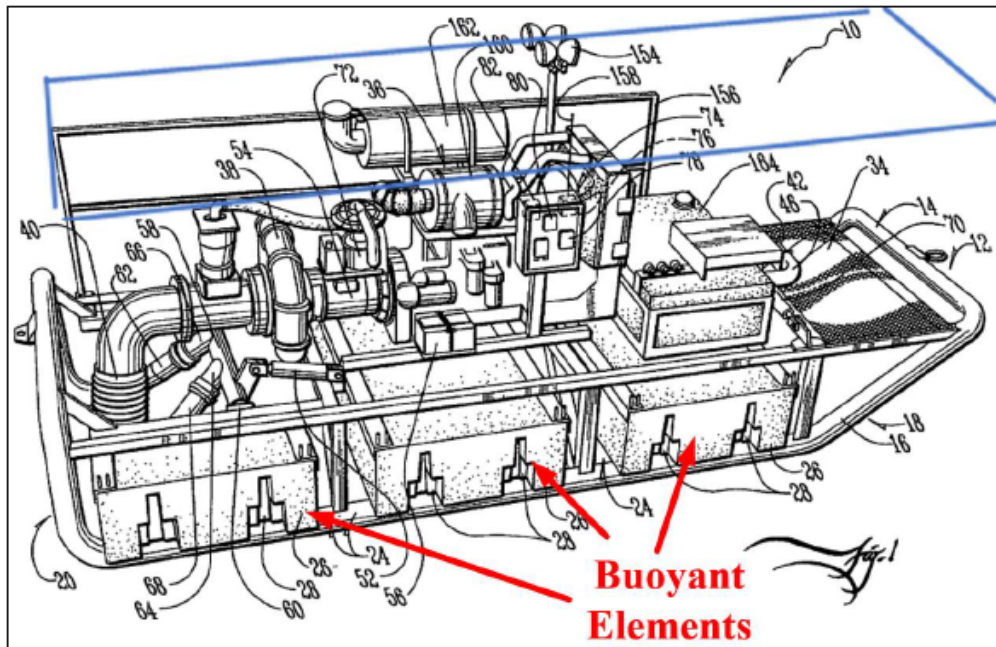
Petition, p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham); [EX1004], Winkle Decl., ¶293 (green annotations added by Dr. Winkel to FIG. 1 of Bryham).

So if a POSITA were even motivated to add Bryham’s wheels to Puck, the resulting combination would only include 3-wheels, not four. Stated differently, if a POSITA simply added Bryham’s wheels to Puck’s vehicle, the resulting combination would not satisfy the language of claims 17 and 23 because the combination would not have both “a first front wheel” and “a second front wheel.”

205. To reach the limitations of claims 17 and 23, Petitioner and Dr. Winkel impermissibly use the ‘708 Patent as a blueprint to arrive at an arrangement where Bryham’s rear

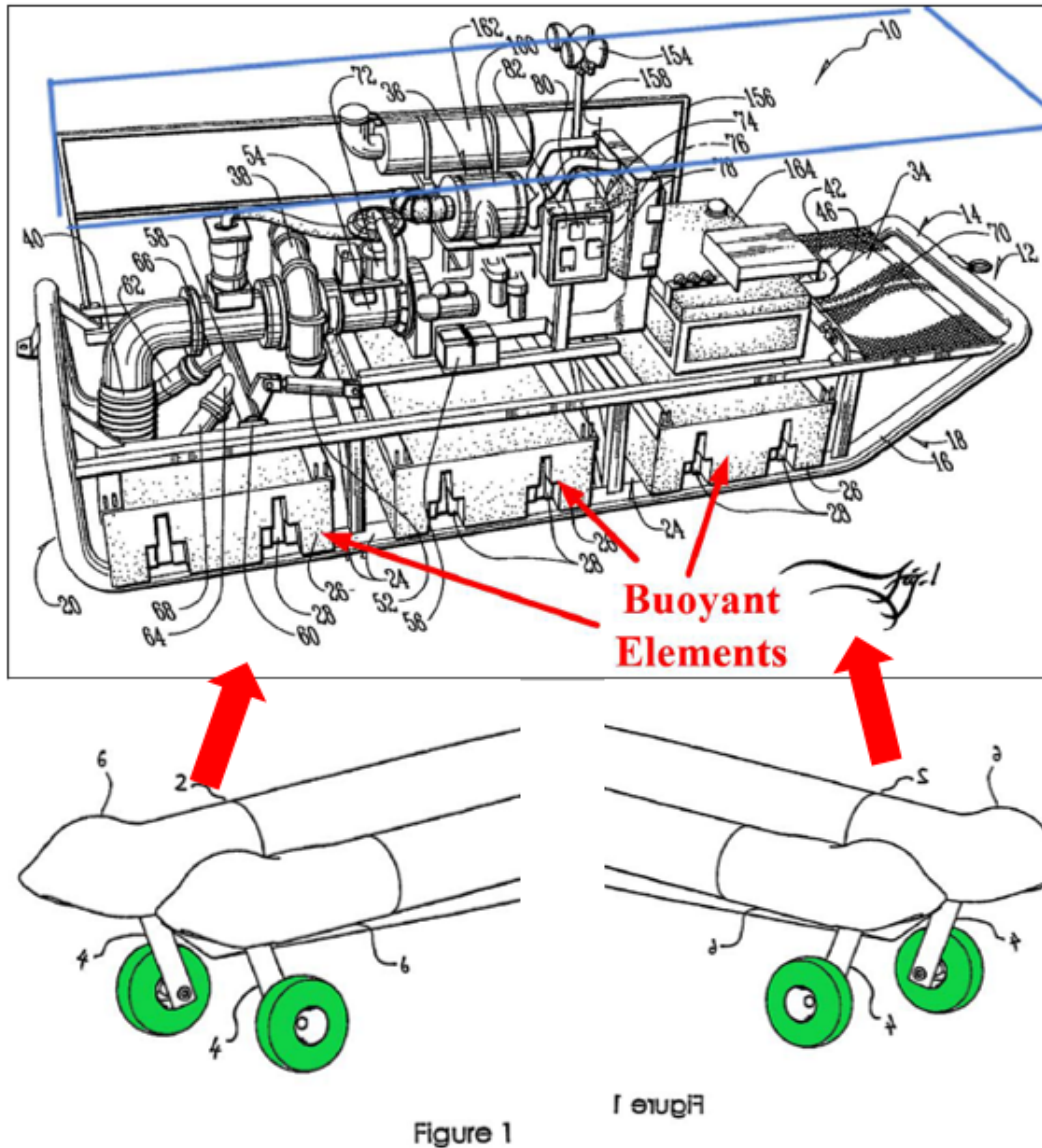
wheels are added at both rear corners of Puck's boat and at both front corners of Puck's boat:

301. As shown below, Puck includes three buoyant elements comprised of dock sections located along the length of the rectangular vehicle body. *Supra* Section X.G. A POSA would have found it obvious to use four wheels, with one wheel at each corner, to best support the rectangular vehicle body of Puck and to provide stability when the vehicle is land-engaging and when floating by evenly distributing the weight. *Supra* Section X.D.



[EX1004], Winkel Decl., ¶301 (annotations to FIG. 1 of Puck added by Dr. Winkel; highlights to ¶301 added herein); *see also* Petition, p. 85.

206. So in other words, Petitioner and Dr. Winkel take the tenuous position that a POSITA would discard the single, steerable wheel in Bryham and would instead place two front wheels on Puck's hull by duplicating the two rear wheels disclosed in Bryham:



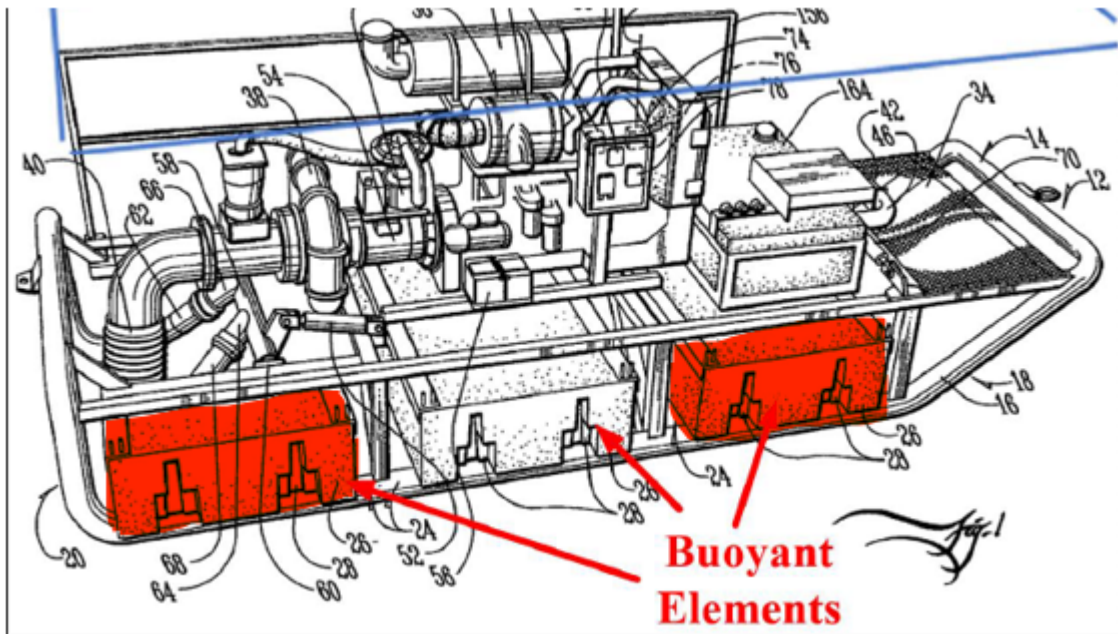
Petition p. 85 (annotations to Puck's FIG. 1 added by Petitioner); Petition p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham; red arrows added herein to FIG. 1 of Bryham); *see also* [EX1004], Winkle Decl., ¶¶293, 301.

207. To complete this mental journey, Petitioner and Dr. Winkel then make yet another unsupported leap that in addition to converting Bryham's 3-wheel configuration to a 4-wheel configuration, a POSITA would then position the wheels on Puck's vehicle such that at least one floating dock section 26 would be situated between the front and rear wheels on each side of the vehicle:

302. Locating the wheels at each corner would result in at least one dock section (buoyant element) being located between the front and rear wheel on each side of the vehicle.

[EX1004], Winkel Decl. ¶302 (highlighting added); *see also* Petition, p. 86. I disagree with this conclusion that a POSITA would have arrived at the claimed arrangement of buoyant elements and wheels when combining Puck and Bryham and/or that a POSITA would have found the claimed arrangement to be obvious. The Puck and Bryham references themselves do not teach or suggest the alternative arrangement Petitioner proposes, where Bryham's single, front wheel is discarded and replaced by a duplicate set of Bryham's rear wheels at the front of the vehicle.

208. Moreover, adding Bryham's wheels to Puck in the manner suggested by Petitioner and Dr. Winkel would require the deletion of the floating dock sections at the corners of the vehicle disclosed in Puck (as shown in red below) to create room for Bryham's retractable wheel assemblies:



Petition, p. 85 (textual annotations added by Petitioner to FIG. 1 of Puck; red lighting to Puck's buoyant elements added herein).

A POSITA would recognize that eliminating the floating dock sections at the corners of the vehicle would cause stability problems when the vehicle is floating. In particular, eliminating the floating dock sections at the rear of the vehicle—as required to add Bryham's wheels—would create uneven buoyancy fore-and-aft, since the downwardly directed intake pipe 40 prevents a floating dock section to be centrally located in the rear of the vehicle. In my opinion, this would discourage a POSITA from locating Bryham's wheels at each corner of Puck's frame with at least one dock section located the front and rear wheels on each side of the vehicle.

209. In my opinion, the modifications that Petitioner and Dr. Winkel advocate to arrive at the claim limitations require much more than the routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint.

210. As a result, the Puck-Bryham Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17 and 23 of the '708 Patent.

C. The Puck-Bryham Combination Fails to Disclose or Suggest “a Power Source Configured to Provide Power to Move the

Vehicle Both When the Vehicle is Ground Engaging and When the Vehicle is Floating in a Liquid Manure Lagoon”

211. Independent claims 1, 17, and 23 all require “a power source configured to provide power to move the vehicle **both** when the vehicle is ground engaging and when the vehicle is floating in a/the liquid manure lagoon” (emphasis added). But neither Puck nor Bryham discloses a power source that powers the vehicle both on land and while floating.

212. Petitioner’s expert argues that a POSITA would be motivated to use Puck’s power source to also power the wheels being added by Bryham:

286. Bryham discloses a power source and a hydraulic drivetrain. “The hydraulic energy can be supplied from a pump 102 powered by an internal combustion engine 85.... The hydraulic energy is used to drive a[] hydraulic motor 108 ... which can ... drive the ground engagement means....” *Id.*, 16:1-6. Puck discloses a power source in the form of a “two-thousand horsepower” diesel engine and “[a] slurry pump [that] is coupled to the power source.” EX1014, ¶¶[0011], [0024]. “[T]he slurry pump ... expel[s] slurry ... from the slurry outputs” to move the agitator. *Id.*, ¶[0037]. Rather than loading the vehicle with multiple engines, a POSITA would have been motivated to use this high-powered internal combustion engine to power the ground engagement means of Bryham and the fluid pump of Puck. The high-powered engine of Puck would easily power each of these components, and doing so would have been cheaper, lighter, and more efficient than providing separate engines for each component.

[EX1004], Winkel Decl., ¶286 (highlighting added). But Petitioner’s expert does not actually show or explain why the claimed arrangement “would be cheaper, lighter, and more efficient.”

213. In my opinion, a POSITA would not find the claimed arrangement, where the power source powers both a manure pump and a hydraulic pump that powers the hydraulic motors of the ground engaging propulsion structure to be obviously “cheaper, lighter, and more efficient” than the other potential options disclosed in Bryham. For example, one of the preferred embodiments

disclosed in Bryham utilizes separate electric motors to power Bryham's wheels. [EX1015], Bryham, col. 16, ln. 13-27. Petitioner's expert appears to be relying on hindsight bias rather than the teachings in the prior art references themselves to conclude that the claimed arrangement is obviously the best.

D. The Puck-Bryham Combination Fails to Disclose “Wireless Remote Control Configured to ... Control At Least One of the Speed and Direction of the Vehicle When the Vehicle is Ground Engaging”

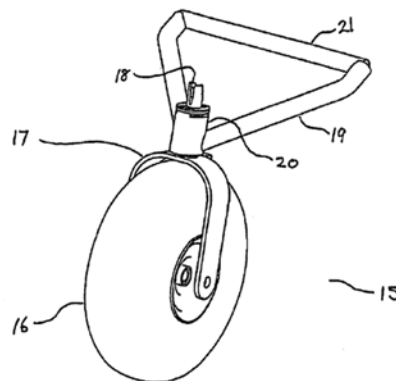
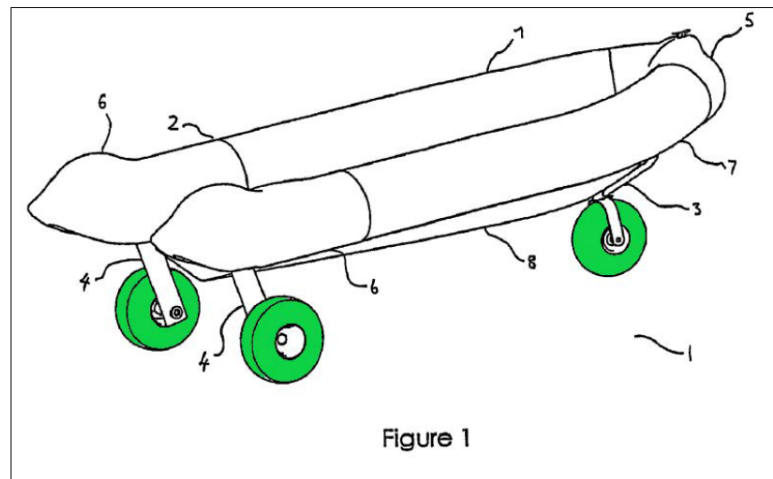
214. Puck's remote-control system is limited to turning the engine on and off, controlling engine speed, turning the nozzles on and off, and controlling nozzle direction. See [EX1014], Puck, ¶¶ [0032]-[0033]. Puck also lacks any sort of ground engaging propulsion structure. As a result, Puck's remote-control system does not provide “wireless remote control configured to enable an operator who is remote from the vehicle to ... control at least one of the speed and direction of the vehicle when the vehicle is ground engaging” as required by the language of the Challenged Claims.

215. Petitioner's expert argues that a POSITA would have been motivated to configure the remote-control steering system of Puck (used while the boat of Puck is floating) to control the speed and direction of Bryham's wheels while the vehicle is ground engaging. [EX1004], Winkel Decl., ¶¶ 287-289. But this argument fails to address whether a POSITA would have a reasonable expectation that Puck's remote-control system could be successfully modified and used for control over Bryham's steering and propulsion system (i.e., Bryham's wheels). Again, a POSITA would understand that just because *some* vehicles can be remote controlled does not mean that *all* vehicles can be remote controlled.

E. The Puck-Bryham Combination Fails to Disclose A Vehicle Including “Four Variable Speed Hydraulic Motors, One Variable Speed Hydraulic Motor Per Wheel, For

Independently Diving the Wheels at Variable Speeds” as Required by Independent Claim 17

216. Independent claim 17 requires an amphibious vehicle with four wheels and “four variable speed hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds.” 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. EX1004, Winkel Decl., ¶¶293-297. But Bryham teaches a three-wheel arrangement and the front wheel in Bryham (i.e., the one at the bow that swivels) is not powered at all and therefore is not powered by its own variable speed hydraulic motor:



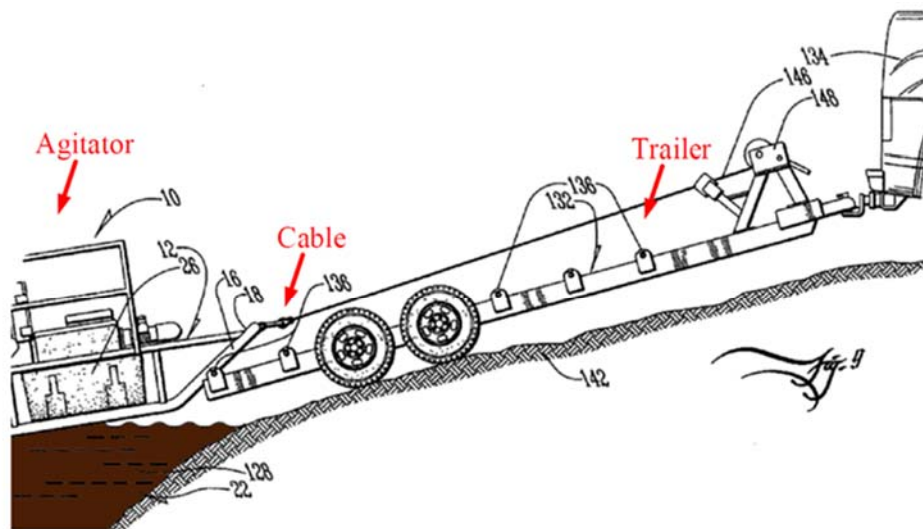
[EX1004], Winkel Decl., ¶293 (green annotations added to FIG. 1 of Bryham by Dr. Winkel);
[EX1015], Bryham, p. 3, FIG. 3A.

217. As a result, Bryham does not teach a system where there is “four variable speed hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds” as required by the language of independent claim 17.

F. A POSITA Would Not Have Possessed a Motivation to Combine Puck and Bryham

218. Petitioner’s expert 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.” [EX1004], Winkel Decl., ¶276. Neither of these reasons/flaws in Puck’s design is supported by Puck’s disclosure.

219. As shown in the annotated image below from Paragraph 334 of the Winkel Declaration, Puck discloses a system where the manure agitation boat can be launched and retrieved without backing the trailer into the manure lagoon:



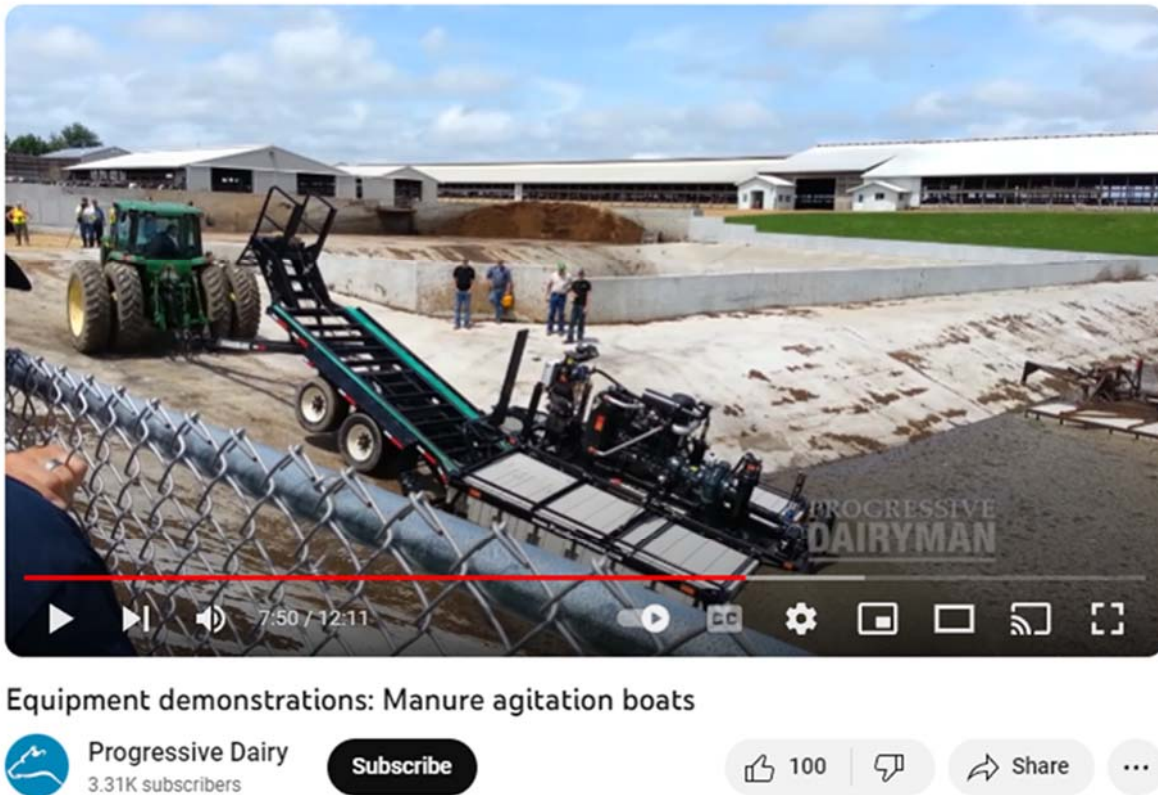
(*Id.*, FIG. 9 (annotated).)

[EX1004], Winkel Decl., ¶¶276-277 (red annotations added by Dr. Winkel to FIG. 9 of Puck).

220. A POSITA would recognize that the process of launching and retrieving Puck’s boat does not require placing a trailer or one’s feet into the hazardous and corrosive manure lagoon

as Petitioner's expert incorrectly argues. See [EX1004], ¶276. Indeed, nothing of the sort is shown or described in Puck's disclosure.

221. My opinion in this regard is further informed by the manure boat demonstration video published by Progressive Dairyman ([EX2008], Progressive Dairyman YouTube Video Screenshots] where neither the trailer nor the operator is shown entering the lagoon when Puck's boat is launched in the video:



[EX2008], Progressive Dairyman YouTube Video Screenshots, p. 7.

222. 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.

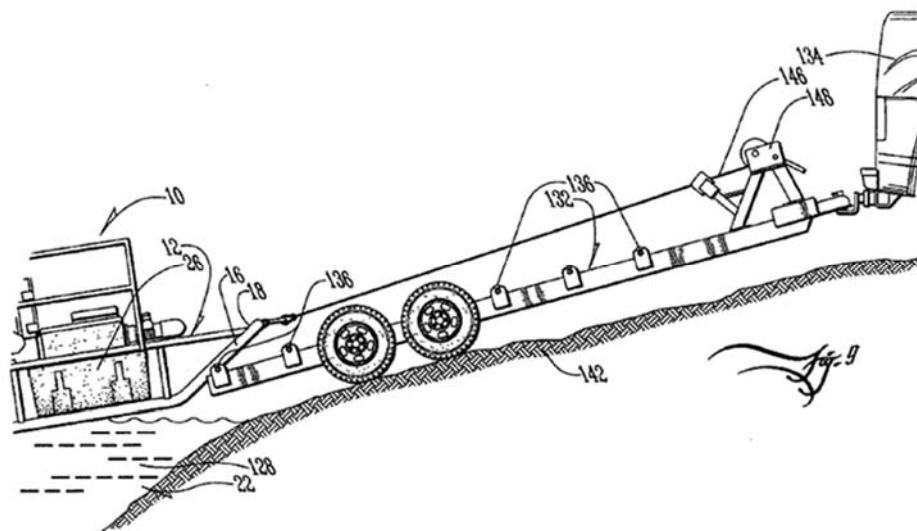
223. Furthermore, if a POSITA were concerned about "exposing a trailer (or vehicle) to highly corrosive environments" as Petitioner's expert argues ([EX1004], Winkel Decl., ¶281), they certainly would not have looked to substitute Puck's trailer, which did not need to be submersed in a manure lagoon, 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.

224. As a result, it is my opinion that Petitioner’s combination of Puck and Bryham would not actually solve the alleged problem of equipment exposure to the corrosive manure lagoon environment. In fact, the opposite is true. A POSITA would expect corrosion problems to be worse if Bryham’s wheels and associated steering, support, and propulsion structure were added to Puck’s manure agitation boat.

G. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining Bryham With Puck

225. The manure agitation boat disclosed in Puck is designed to be launched and retrieved using a trailer:



[EX1014], Puck, p. 10, FIG 9. As a result, Puck fails to teach the limitation of the Challenged Claim reciting a “ground engaging propulsion structure.”

226. With respect to Ground 4, Petitioner’s expert asserts that a POSITA would **add** Bryham’s wheels to the manure agitation boat disclosed in Puck ([EX1004], Winkel Decl., ¶276); however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

227. 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:

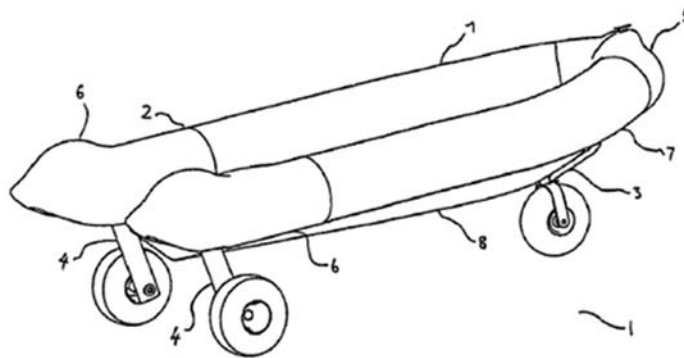


Figure 1

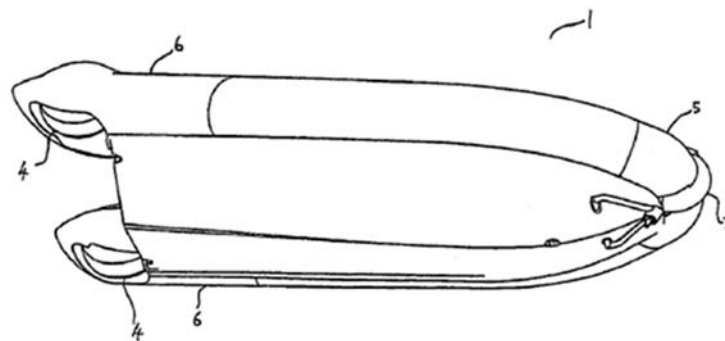


Figure 2

[EX1015], Bryham, p. 2, FIGS. 1 and 2.

228. Unlike Bryham, Puck is more of a barge compared to a traditional boat and is constructed from modular floating dock sections 26 that are placed in a plurality of receiver slots

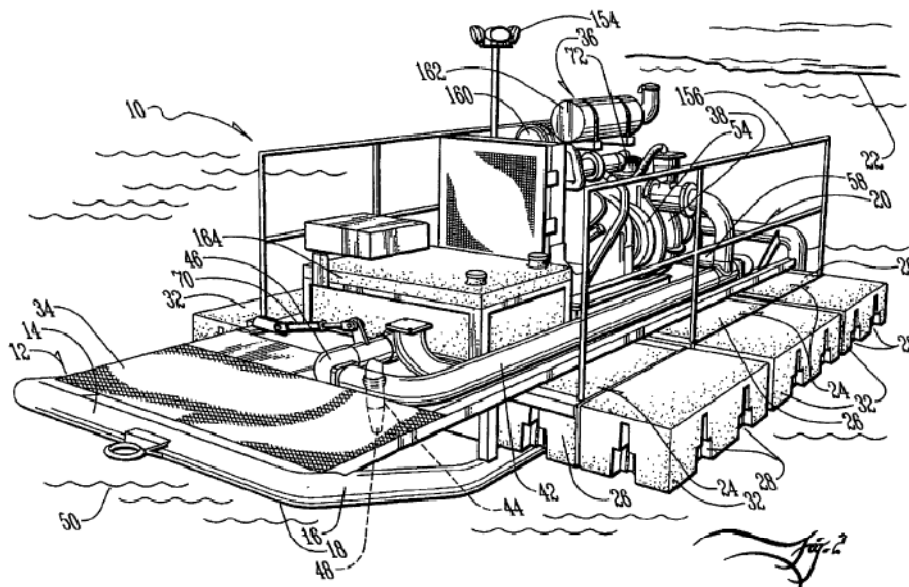
24 in a ladder-like frame 14:

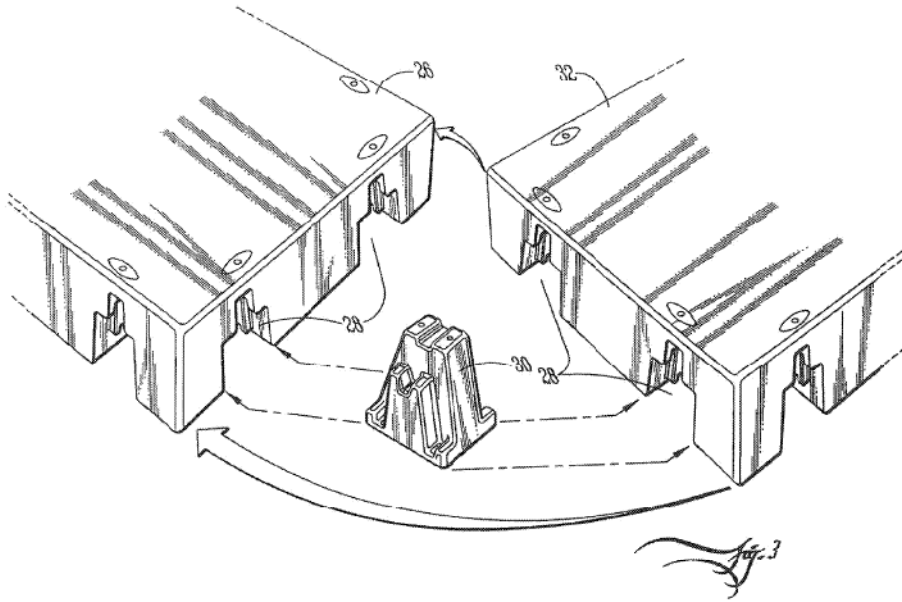
(10) from a manure lagoon (22). (FIGS. 1-2). The frame (14) defines a plurality of receiver slots (24) into which are provided modular dock sections (26), such as those known in the art. In the preferred embodiment, the dock sections (26) are 1000 series dock components manufactured by Connect-A-Dock, Inc. of Atlantic, Iowa.

[0023] The modular dock sections (26) are provided with connector slots (28) to fit into interlocking mating engagement with connector pins (30). The connector pins (30) allow the modular dock sections (26) to connect to additional dock sections (32) in a manner such as that known in the art. (FIGS. 1 and 3). The use of interlocking additional dock sections (32) allows for the buoyancy of the vessel (12) to be increased and allows the additional dock sections (32) to be removed to reduce the overall width of the agitator (10) for transport and storage. If desired, pontoons, inflatable components or any

[EX1014], Puck, ¶¶22-23 (highlighting added).

229. The modular dock sections 26 in Puck are held together with connector pins 30:





[EX1014], Puck, pp. 3-4, FIGS. 2 and 3.

230. In view of this disclosure, a POSITA would not reasonably expect that Bryham's wheels could be successfully added to Puck's vessel. A POSITA would understand that adding Bryham's wheels would interfere with the modular dock sections required in Puck for floatation as the two could not occupy the same space.

231. In my opinion, a POSITA would also understand that Puck's vessel is not designed so that its entire weight can be carried at 3 (one in the front and two in the rear) or 4 discrete points as it would be if Bryham's wheels were added.

232. Puck's vessel is designed so that its weight is evenly distributed when it is on shore and on the trailer. The connector pins that hold the modular dock sections together slide into slots in the modular dock sections from the bottom and the connector pins are wider at the bottom than they are at the top. A POSITA would understand that this design gives the connection between the modular dock sections good weight carrying ability when they are floating, but it is not designed to hold the modular dock sections together when they are suspended above the ground, as they would be if Bryham's wheels were added.

233. Finally, Petitioner's expert previously acknowledged that manure lagoons – the

environment in which Puck's vessel operates – often have steep and slippery embankments. *See Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2024-00004, EX1004, ¶336 (PTAB Oct. 13, 2023); *Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2023-01161, EX1004, ¶334 (PTAB June 23, 2023). And Petitioner's expert acknowledges here a similar problem of "launching vessels in area lacking launching infrastructure." [EX1004], Winkel Decl., ¶280. But Petitioner's expert does not explain why a POSITA would have expected the 3-wheel design disclosed in Bryham to provide Puck's vessel with the capability of traversing these steep and slippery embankments.

234. 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.

235. 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 might not get hurt if a remote-control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. This tilting risk would dissuade a POSITA from adding Bryham's wheels to the remote-controlled manure

agitation boat disclosed in Puck.

236. In my opinion, the modifications that Petitioner and Dr. Winkel advocate whereby the single, front wheel of Bryham would be discarded and replaced by a duplicate set of Bryham's rear wheels at the front corners of Puck's vehicle require much more than a routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint. In my opinion, a POSITA would not have arrived at the claimed arrangement using the Puck and Bryham references as a starting point because neither reference teaches or suggests the modifications Petitioner proposes (i.e., deleting Bryham's single, front wheel and placing a duplicate set of Bryham's rear wheels at the front corners of a vehicle).

H. Petitioner's Combination of Puck with Bryham to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

237. As conveyed above, combining Puck with Bryham to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to Puck – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to relocate Puck's slurry pump from its location high on the vehicle to a location where it would be immersed in the liquid manure when the vehicle is floating – even though there is no teaching or suggestion of this.
- Second, a POSITA would need to find motivation to discard Bryham's single front wheel, and add two sets of Bryham's rear wheels to the front and rear corners of Puck's boat – even though there is no teaching or suggestion of this.
- Third, a POSITA would need to find motivation to remove the front and rear buoyant elements on each side of Puck's boat to accommodate Bryham's wheels, in order to have the remaining middle buoyant element on each of the

right and left sides of the boat positioned between the new front and rear wheels on each side of the boat. And a POSITA would have to do all of this with the knowledge that serious stability problems would likely ensue with no buoyant elements position at the rear of the vehicle

- Fourth, a POSITA would need to find motivation to discard the electric wheel motors disclosed in Bryham and replace them with four variable speed hydraulic motors, one for each wheel, and then modify Puck's hydraulic system, which was only designed to move linear actuators, so that it could also be used to power hydraulic motors to drive the new wheels from Bryham.
- Fifth, a POSITA would need to find motivation to modify Puck's wireless remote control, which was only designed to control the engine and nozzles, so that it could also independently control the speed and/or direction of the new Bryham wheels – even though there is no teaching or suggestion of how Puck's remote control system could be modified to control Bryham's wheels.

238. In my opinion, no POSITA would find motivation to take these leaps to arrive at the '708 Patent's Challenged Claims. A POSITA would only arrive at the '708 Patent's Challenged Claims by using the Challenged Claims as blueprint.

239. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, and 23 are nonobvious over the Puck-Bryham Combination

XV. GROUND 5: CLAIMS 1, 8-18, 23-28, AND 35-38 ARE NOT OBVIOUS BASED ON PUCK IN VIEW OF BRYHAM AND BENNETT-II

240. In the following sections I examine various claim elements of the '708 Patent and explain why at least independent claims 1, 17, and 23 are not rendered obvious by Puck in view of Bryham and Bennett-II ("the Puck-Bryham-Bennett-II Combination"). Claims 8-16 depend from claim 1, claim 18 depends from claim 17, claims 24-28 and 35-38 depend from claim 23, and

are not rendered obvious by the Puck-Bryham-Bennett-II Combination for at least the same reasons.

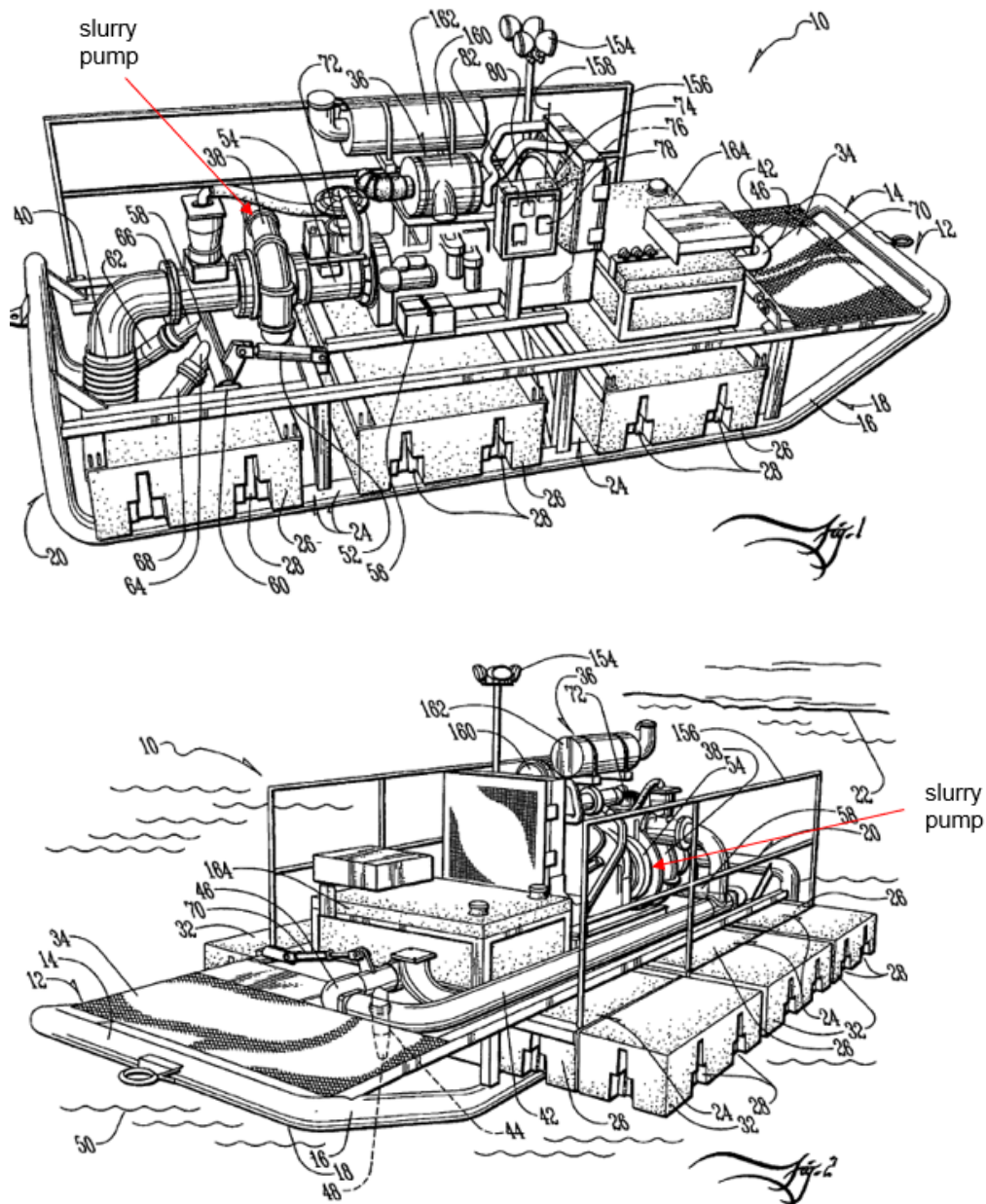
A. The Puck-Bryham-Bennett-II Combination Fails to Disclose or Suggest the Liquid Manure Pump Described in Independent Claim 1

241. Independent claim 1 requires “an impeller in a liquid manure pump, *the liquid manure pump comprising a bottom fluid inlet configured to be immersed in the liquid manure when the vehicle is floating*, whereby the impeller is configured to draw liquid manure to be pumped through the bottom fluid inlet, *the liquid manure pump comprising a housing with the bottom fluid inlet in the housing*” (emphasis added). Neither Bryham nor Bennett-II discloses a liquid manure pump, and Puck fails to disclose a liquid manure pump that satisfies the claim language italicized above.

242. Even when combined, Puck, Bryham, and Bennett-II fail to teach or suggest a vehicle with a liquid manure pump that is configured to be immersed in liquid manure when the vehicle is floating.

243. As shown in Figs. 1 and 2 of Puck, which are annotated below, the slurry pump 38 disclosed in Puck is mounted high in the vessel hull and is therefore not immersed in the liquid

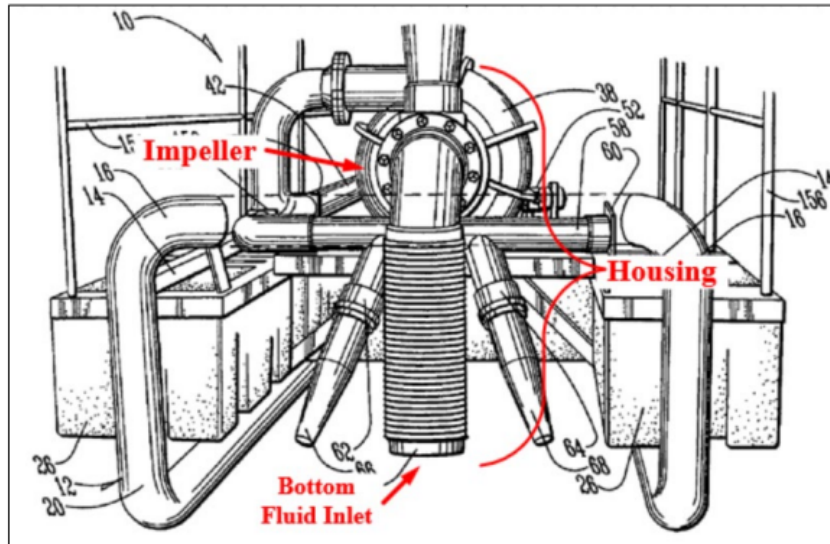
manure when the vehicle is floating:



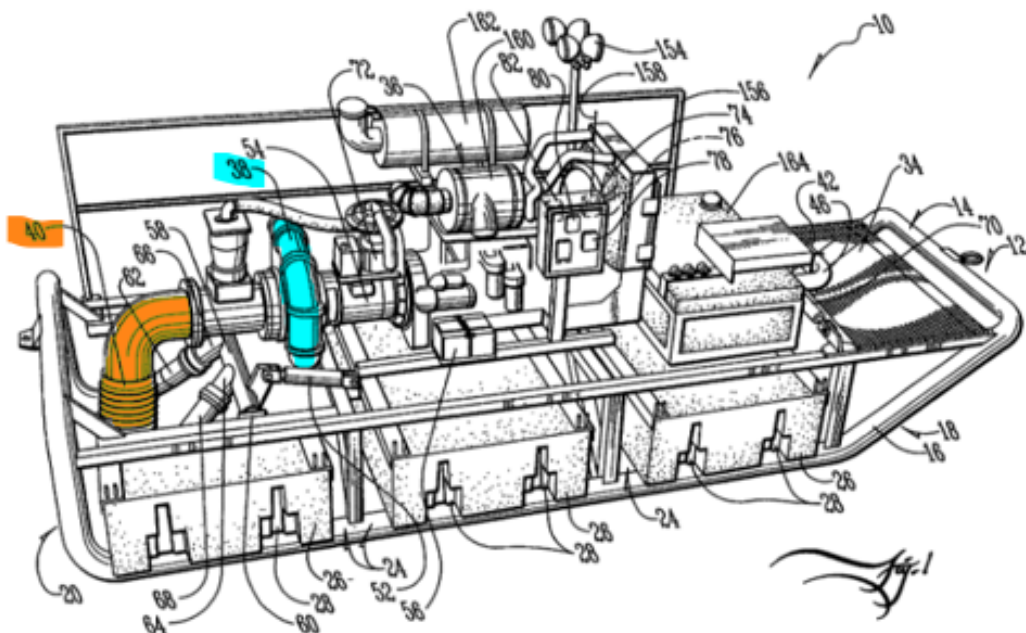
[EX1014], Puck, FIGS. 1 and 2 (slurry pump annotations added)

244. In an attempt to invalidate claim 1, Petitioner and Dr. Winkel make a structurally inaccurate argument that the inlet of the pump housing in Puck is configured to be immersed in the liquid manure when the vehicle is floating. As shown below in the annotated figure below, which comes from page 79 of the Petition and paragraph 291 of Dr. Winkel's Declaration

[EX1004], Petitioner and Dr. Winkel argue that the “housing” of the liquid manure pump 38 disclosed in Puck also includes the “intake pipe 40”:



Petition, p. 79 (annotations added by Petitioner). But as shown in Fig. 1 of Puck, which is annotated below, the intake pipe 40 is a separate component that is not part of the housing of the liquid manure pump 38:



[EX1014], Puck, p. 12, FIG. 1 (annotations added in orange and blue).

245. The written description in Puck further demonstrates that the Petitioner's position is untenable. For example, Paragraph [0026] of Puck describes the slurry pump 38 as being "coupled to" the downwardly directed intake pipe 40 and that intake pipe 40 may be extensible:

[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.

[0026] The slurry pump (38) is coupled to a liquid manure intake, such as a slurry intake, which is a downwardly directed intake pipe (40) in the preferred embodiment and is capable of handling manure crust, supernatant, sludge and the combined slurry. (FIGS. 1 and 4). If desired, the intake pipe (40) may be extensible to adjust the depth of the intake pipe (40). The intake pipe (40) is constructed to extend about twenty-four inches below the surface of the lagoon (22), but may be extended or retracted to any desired depth, including the entire depth of the lagoon (22).

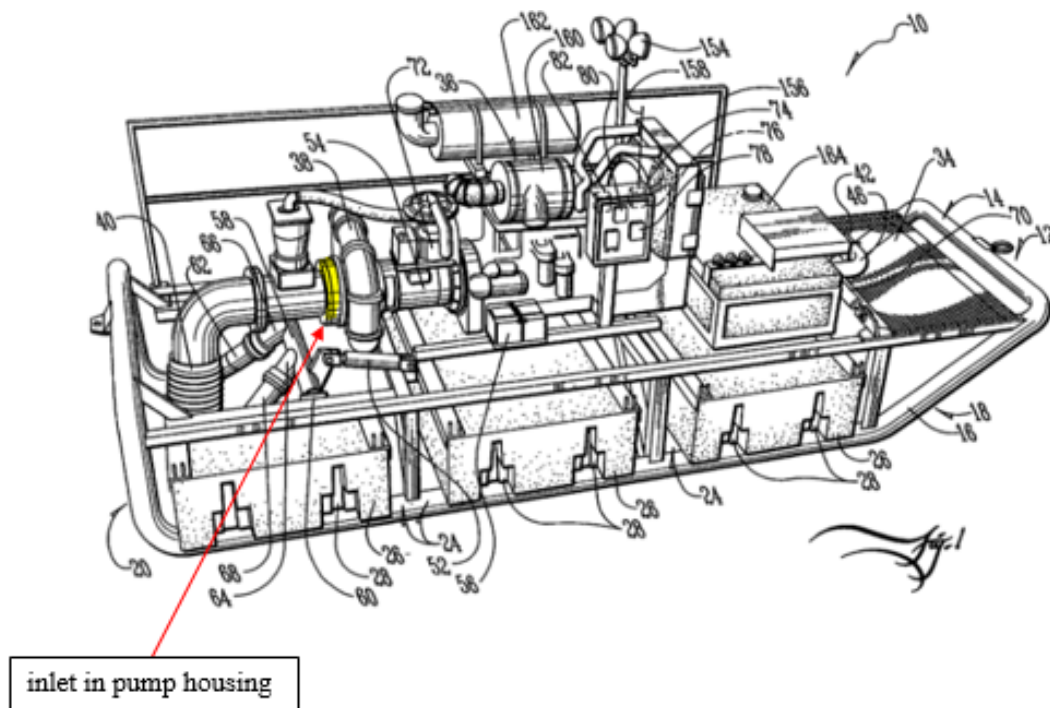
[0027] Coupled to the slurry pump (38) by a transport pipe (42) is a first slurry output (44). (FIG. 5). The first slurry output (44) is an angled pipe (46) pivotably coupled to the transport pipe (42). Releasably coupled to the angled pipe (46) is a tapered liquid manure nozzle (48) to increase the velocity of slurry (50) passing through the nozzle (48). (FIGS. 4-5). If desired, different sizes and configurations of nozzles (48) may be coupled to the angled pipe (46) to adjust the direction and velocity of slurry (50) exiting through the first slurry output (44). Coupled between the angled pipe (46) and the frame (14) is a steering control hydraulic cylinder (52). The hydraulic cylinder (52) is coupled to a hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56). (FIGS. 1 and 5).

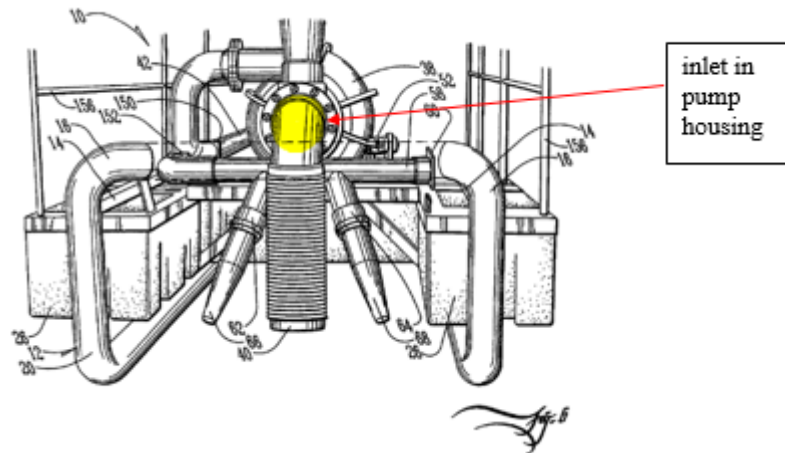
[EX1014], Puck, ¶25 (highlighting added). The "intake pipe 40" is no more a part of the slurry pump 38 than the "transport pipe 42," which is also described as being "coupled to" the slurry pump 38. In view of this disclosure, a POSITA would not consider the intake pipe 40 of Puck to

be part of the “housing” of the liquid manure pump 38 and therefore would not understand Puck to teach a “liquid manure pump comprising a *bottom* fluid inlet configured to be immersed in the liquid manure when the vehicle is floating” or “a housing with the bottom fluid inlet *in the housing*” as required by claim 1 of the ‘708 Patent.

246. Because the language of claim 1 requires “the bottom fluid inlet” to be “in the housing,” a POSITA would not consider the inlet at the bottom of the intake pipe 40 to be “a bottom fluid inlet” of the slurry pump 38 itself because that inlet is not “in the housing” of the slurry pump 38, but a separate conduit altogether.

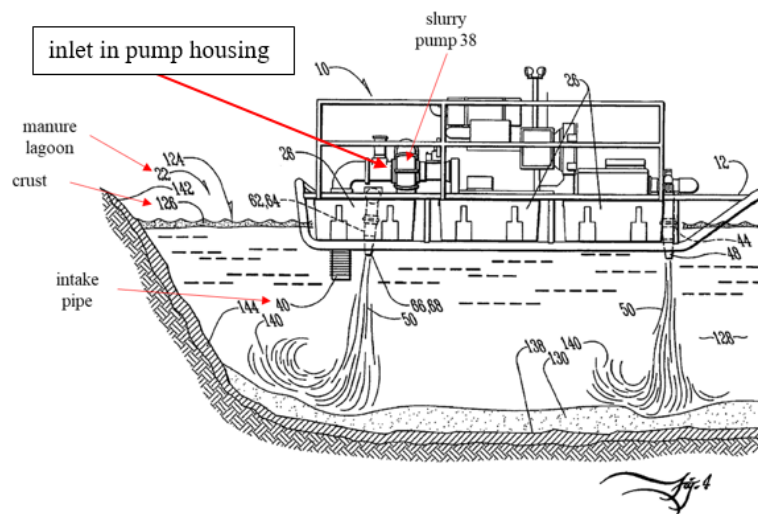
247. Instead, a POSITA would understand Puck to disclose a slurry pump 38 with an inlet that is positioned in the *rear side* of the pump housing:





[EX1014], Puck, pp. 2, 7, FIGS. 1 and 6 (pump housing annotations added).

A POSITA would not consider this inlet in Puck's pump housing 38 to be "a *bottom* fluid inlet" as required by the language of claim 1 because it is not positioned at the *bottom* of the slurry pump 38 and it is not "configured to be immersed in the liquid manure when the vehicle is floating." Instead, the inlet in Puck's pump housing 38 is positioned above the "waterline" when the vehicle is floating. As shown in Figure 4 of Puck (reproduced below), the pump housing and rear inlet of the slurry pump 38 is designed to be above the surface of the manure lagoon 22 and crust 126 during operation.



[EX1014], Puck, p. 5, FIG. 4 (annotations added).

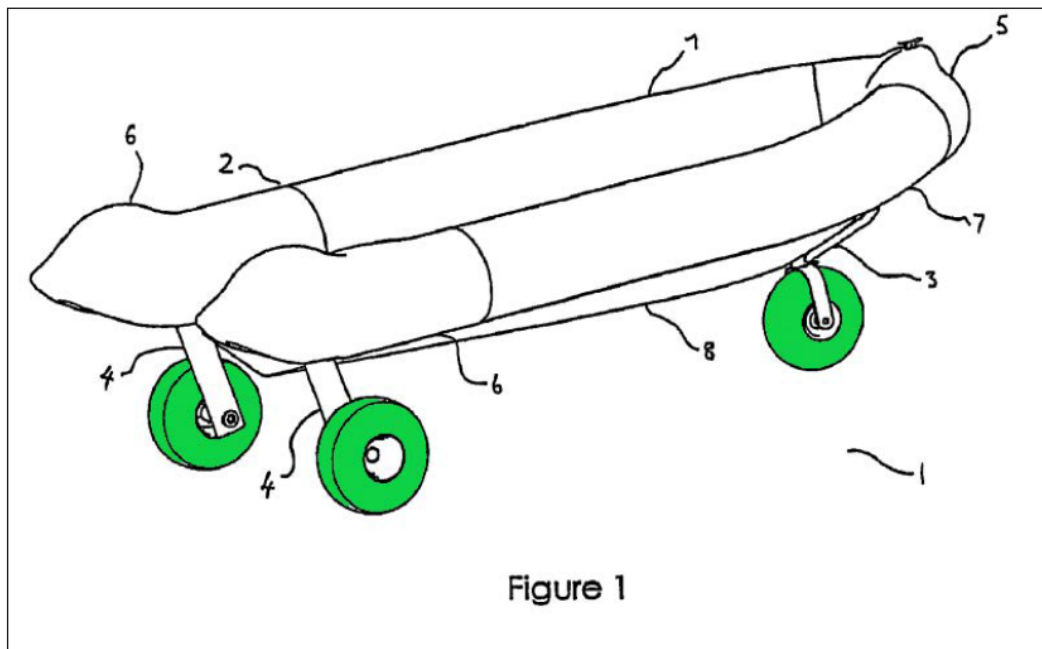
B. The Puck-Bryham-Bennett-II Combination Fails to Disclose the Arrangement of Buoyant Elements Situated Between Front and Rear Wheels on Each Side of the Vehicle as Required by Independent Claims 17 and 23

248. Claim 17 of the '708 Patent requires “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.” Similarly, claim 23 recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel.”

249. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle” (emphasis added).

250. In my opinion, these claim elements are not disclosed by the Puck-Bryham-Bennett-II Combination.

251. The vehicle disclosed in Puck is a manure agitation boat. Therefore, Puck’s vehicle lacks ground engaging propulsion structure such as front and rear wheels. As a result, Petitioner and Dr. Winkel assert that a POSITA would add Bryham’s wheels to the manure agitation boat disclosed in Puck. Petition, pp. 76, Winkel Decl. [EX1004], ¶276. But what the Petitioner and Dr. Winkel suggest is not a simply plug-and-play substitution. As shown below, Bryham discloses a three-wheeled arrangement, where a single, steerable wheel is provided at the bow of the boat hull:



Petition, p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham); [EX1004], Winkle Decl., ¶293 (green annotations added by Dr. Winkel to FIG. 1 of Bryham)

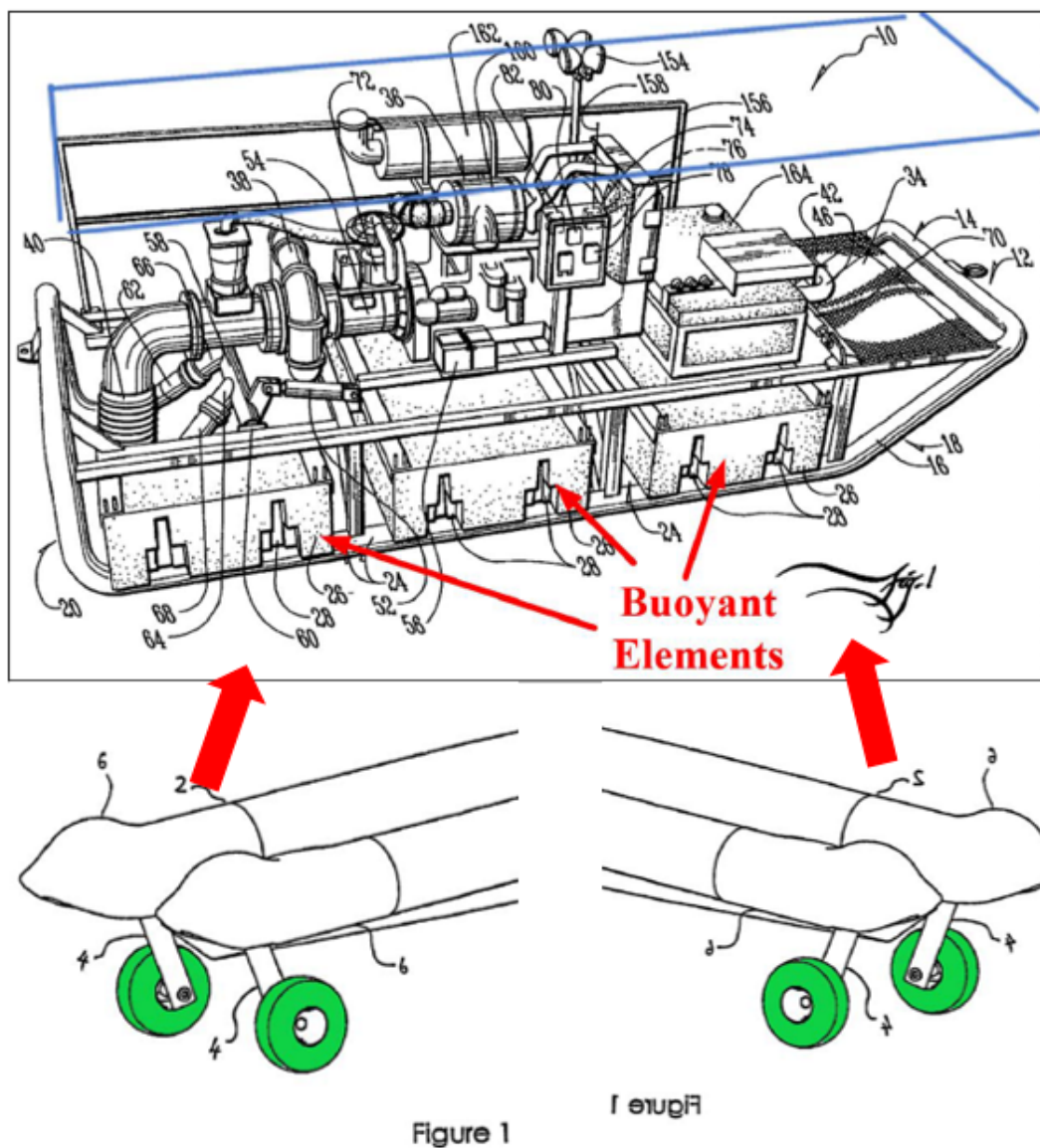
So if a POSITA were even motivated to add Bryham’s wheels to Puck, the resulting combination would only include 3-wheels, not four. Stated differently, if a POSITA simply added Bryham’s wheels to Puck’s vehicle, the resulting combination would not satisfy the language of claims 17 and 23 because the combination would not have both “a first front wheel” and “a second front wheel.”

252. To reach the limitations of claims 17 and 23, Petitioner and Dr. Winkel impermissibly use the ‘708 Patent as a blueprint to arrive at an arrangement where Bryham’s rear wheels are added at both rear corners of Puck’s boat and at both front corners of Puck’s boat:

301. As shown below, Puck includes three buoyant elements comprised of dock sections located along the length of the rectangular vehicle body. *Supra* Section X.G. A POSA would have found it obvious to use four wheels, with one wheel at each corner, to best support the rectangular vehicle body of Puck and to provide stability when the vehicle is land-engaging and when floating by evenly distributing the weight. *Supra* Section X.D.

[EX1004], Winkel Decl.), ¶301 (highlighting added); *see also* Petition, p. 85.

253. So in other words, Petitioner and Dr. Winkel take the tenuous position that a POSITA would discard the single, steerable wheel in Bryham and would instead place two front wheels on Puck's hull by duplicating the two rear wheels disclosed in Bryham:



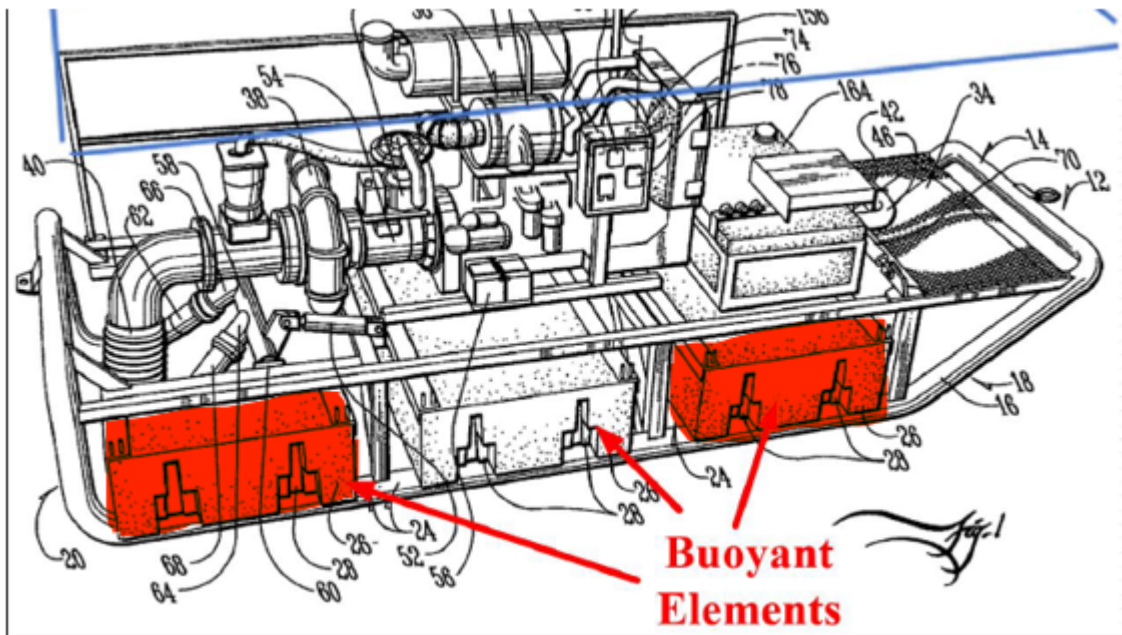
Petition p. 85 (annotations to Puck's FIG. 1 added by Petitioner); Petition p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham; red arrows added herein to FIG. 1 of Bryham); *see also* [EX1004], Winkel Decl., ¶¶293, 301.

254. To complete this mental journey, Petitioner and Dr. Winkel then make yet another unsupported leap that in addition to converting Bryham's 3-wheel configuration to a 4-wheel configuration, a POSITA would then position the wheels on Puck's vehicle such that at least one floating dock section 26 would be situated between the front and rear wheels on each side of the vehicle:

302. Locating the wheels at each corner would result in at least one dock section (buoyant element) being located between the front and rear wheel on each side of the vehicle.

[EX1004], Winkel Decl., ¶302 (highlighting added); *see also* Petition, p. 86. I disagree with this conclusion that a POSITA would have arrived at the claimed arrangement of buoyant elements and wheels when combining Puck, Bryham, and Bennett-II and/or that a POSITA would have found the claimed arrangement to be obvious. The Puck, Bryham, and Bennett-II references themselves do not teach or suggest the alternative arrangement Petitioner proposes, where Bryham's single, front wheel is discarded and replaced by a duplicate set of Bryham's rear wheels at the front of the vehicle.

255. Moreover, adding Bryham's wheels to Puck in the manner suggested by Petitioner and Dr. Winkel would require the deletion of the floating dock sections at the corners of the vehicle disclosed in Puck (as shown in red below) to create room for Bryham's retractable wheel assemblies:



Petition, p. 85 (textual annotations added by Petitioner to FIG. 1 of Puck; red lighting to Puck's buoyant elements added herein).

A POSITA would recognize that eliminating the floating dock sections at the corners of the vehicle would cause stability problems when the vehicle is floating. In particular, eliminating the floating dock sections at the rear of the vehicle—as required to add Bryham's wheels—would create uneven buoyancy fore-and-aft, since the downwardly directed intake pipe 40 prevents a floating dock section to be centrally located in the rear of the vehicle. In my opinion, this would discourage a POSITA from locating Bryham's wheels at each corner of Puck's frame with at least one dock section located the front and rear wheels on each side of the vehicle.

256. In my opinion, the modifications that Petitioner and Dr. Winkel advocate to arrive at the claim limitations require much more than the routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint.

257. Bennett-II discloses a vehicle with tracks. Bennett-II also fails to disclose the placement of buoyant elements at the sides of the vehicle. As a result, Bennett-II adds nothing to

the analysis of this claim element, nor does Petitioner suggest that it does.

258. As a result, the Puck-Bryham Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17 and 23 of the '708 Patent.

C. The Puck-Bryham-Bennett-II Combination Fails to Disclose or Suggest “a Power Source Configured to Provide Power to Move the Vehicle Both When the Vehicle is Ground Engaging and When the Vehicle is Floating in a Liquid Manure Lagoon”

259. Independent claims 1, 17, and 23 all require “a power source configured to provide power to move the vehicle **both** when the vehicle is ground engaging and when the vehicle is floating in a/the liquid manure lagoon” (emphasis added). But neither Puck, Bryham, nor Bennett-II discloses a power source that powers the vehicle both on land and while floating.

260. Petitioner’s expert argues that a POSITA would be motivated to use Puck’s power source to also power the wheels being added by Bryham:

286. Bryham discloses a power source and a hydraulic drivetrain. “The hydraulic energy can be supplied from a pump 102 powered by an internal combustion engine 85.... The hydraulic energy is used to drive a[] hydraulic motor 108 ... which can ... drive the ground engagement means....” *Id.*, 16:1-6. Puck discloses a power source in the form of a “two-thousand horsepower” diesel engine and “[a] slurry pump [that] is coupled to the power source.” EX1014, ¶¶[0011], [0024]. “[T]he slurry pump ... expel[s] slurry ... from the slurry outputs” to move the agitator. *Id.*, ¶[0037]. Rather than loading the vehicle with multiple engines, a POSA would have been motivated to use this high-powered internal combustion engine to power the ground engagement means of Bryham and the fluid pump of Puck. The high-powered engine of Puck would easily power each of these components, and doing so would have been cheaper, lighter, and more efficient than providing separate engines for each component.

[EX1004], Winkel Decl., ¶286 (highlighting added). But Petitioner’s expert does not actually show or explain why the claimed arrangement “would be cheaper, lighter, and more efficient.”

261. In my opinion, a POSITA would not find the claimed arrangement, where the power source powers both a manure pump and a hydraulic pump that powers the hydraulic motors of the ground engaging propulsion structure to be obviously “cheaper, lighter, and more efficient” than the other potential options disclosed in Bryham. For example, one of the preferred embodiments disclosed in Bryham utilizes separate electric motors to power Bryham’s wheels. [EX1015], Bryham, col. 16, ln. 13-27. Petitioner’s expert appears to be relying on hindsight bias rather than the teachings in the prior art references themselves to conclude that the claimed arrangement is obviously the best.

**D. The Puck-Bryham-Bennett-II Combination Fails to Disclose
“Wireless Remote Control Configured to ... Control at Least
One of the Speed and Direction of the Vehicle When the
Vehicle is Ground Engaging”**

262. 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. See [EX1014], Puck, ¶¶[0032]-[0033]. Puck also lacks any sort of ground engaging propulsion structure. As a result, Puck’s remote-control system does not provide “wireless remote control configured to enable an operator who is remote from the vehicle to ... control at least one of the speed and direction of the vehicle when the vehicle is ground engaging” as required by the language of the Challenged Claims.

263. Petitioner’s expert argues that a POSITA would have been motivated to configure the remote-control steering system of Bennett-II to control the speed and direction of the ground engagement means of Bryham while the vehicle is ground engaging. [EX1004], Winkel Decl., ¶315. But this argument fails to address whether a POSITA would have a reasonable expectation that Bennett’s remote-control system could be used for control over Bryham’s steering and propulsion system (i.e., Bryham’s wheels).

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

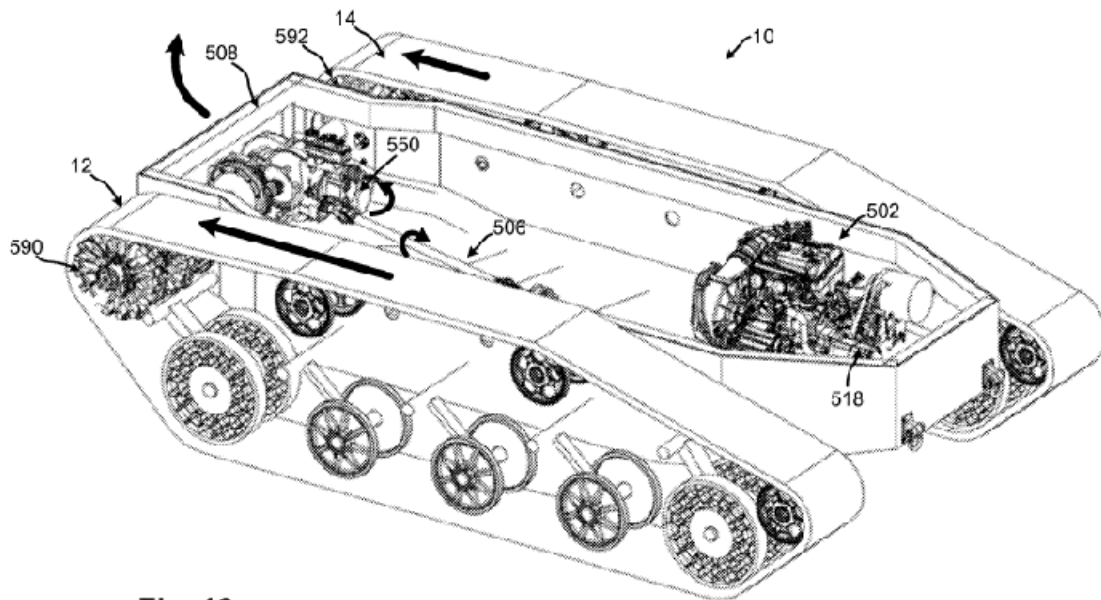


Fig. 16

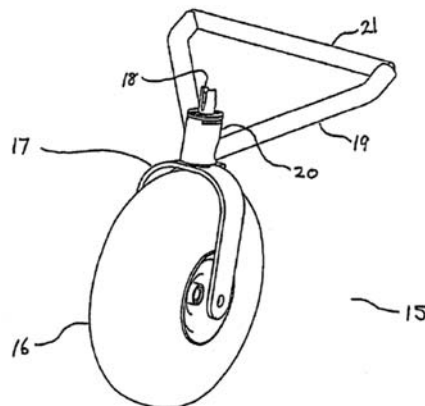
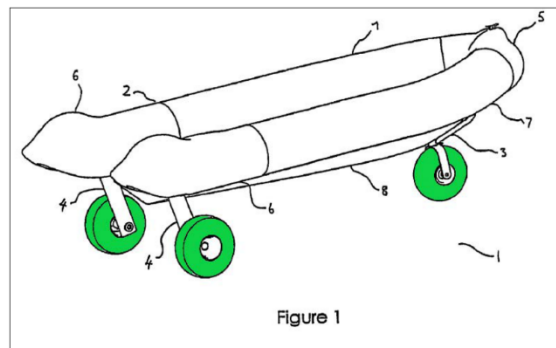
[EX1017], Bennett, p. 22, FIG. 16.

265. The fact that paragraph [0043] of Bennett-II ([EX1017]) 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 substantially different from Bennett-II’s drivetrain.

E. The Puck-Bryham-Bennett-II Combination Fails to Disclose a Vehicle Including “Four Variable Speed Hydraulic Motors, One Variable Speed Hydraulic Motor Per Wheel, For

Independently Diving the Wheels at Variable Speeds” as Required by Independent Claim 17

266. Independent claim 17 requires an amphibious vehicle with four wheels and “four variable speed hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds.” 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. [EX1004], Winkel Decl., ¶¶293-297. But Bryham teaches a three-wheel arrangement and the front wheel in Bryham (i.e., the one at the bow that swivels) is not powered at all and therefore is not powered by its own variable speed hydraulic motor:



[EX1004], Winkel Decl., ¶293 (green annotations added to FIG. 1 of Bryham by Dr. Winkel);
[EX1015], Bryham, p. 3, FIG. 3A .

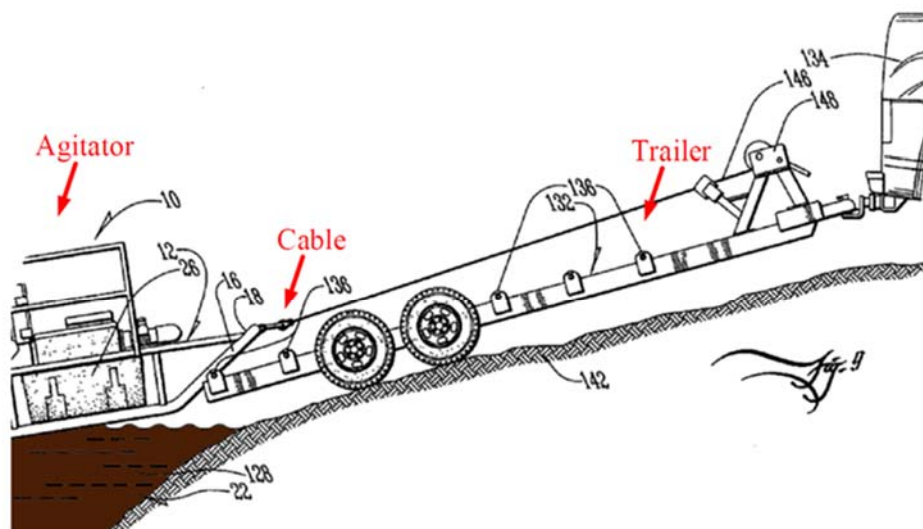
267. As a result, Bryham does not teach a system where there is “four variable speed

hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds” as required by the language of independent claim 17.

F. A POSITA Would Not Have Possessed a Motivation to Combine Puck, Bryham, and Bennett-II

268. Petitioner’s expert 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.” EX1004, Winkel Decl., ¶276. Neither of these reasons/flaws in Puck’s design is supported by Puck’s disclosure. And Bennett-II does not correct these problems or provide any additional motivation to add Bryham’s wheels to Puck.

269. As shown in the annotated image below from Paragraph 334 of the Winkel Declaration, Puck discloses a system where the manure agitation boat can be launched and retrieved without backing the trailer into the manure lagoon:



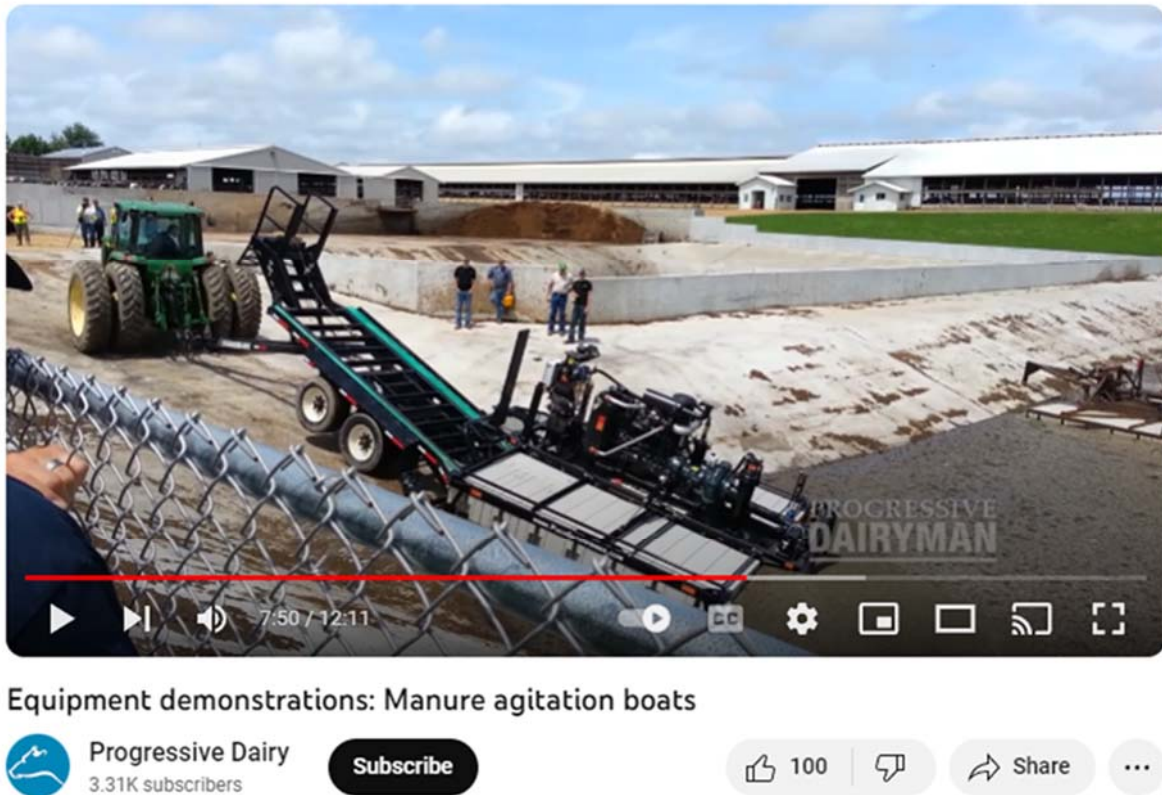
(Id., FIG. 9 (annotated).)

[EX1004], Winkel Decl., ¶¶276-277 (red annotations added by Dr. Winkel to FIG. 9 of Puck).

270. A POSITA would recognize that the process of launching and retrieving Puck’s boat does not require placing a trailer or one’s feet into the hazardous and corrosive manure lagoon

as Petitioner’s expert incorrectly argues. See [EX1004], ¶276. Indeed, nothing of the sort is shown or described in Puck’s disclosure.

271. My opinion in this regard is further informed by the manure boat demonstration video published by Progressive Dairyman ([EX2008], Progressive Dairyman YouTube Video Screenshots), where neither the trailer nor the operator is shown entering the lagoon when Puck’s boat is launched in the video:



[EX2008], Progressive Dairyman YouTube Video Screenshots, p. 7.

272. 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. Bennett-II’s disclosure of remote control does not change the fact that the “problems” Petitioner’s expert points to in Puck did not actually exist.

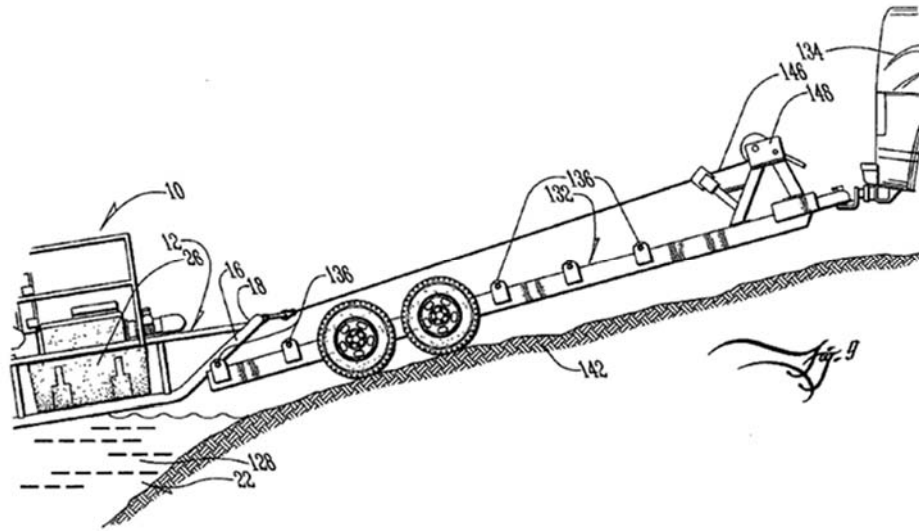
273. Furthermore, if a POSITA were concerned about “exposing a trailer (or vehicle) to highly corrosive environments” as Petitioner’s expert argues ([EX1004], Winkel Decl., ¶281), they

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. Nor does Bennett-II suggest that corrosion would not be a problem if the Puck-Bryham-Bennett-II Combination were made.

274. As a result, it is my opinion that Petitioner's combination of Puck and Bryham would not actually solve the alleged problem of equipment exposure to the corrosive manure lagoon environment. In fact, the opposite is true. A POSITA would expect corrosion problems to be worse if Bryham's wheels and associated steering, support, and propulsion structure were added to Puck's manure agitation boat.

G. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining Bryham With Puck

275. The manure agitation boat disclosed in Puck is designed to be launched and retrieved using a trailer:



[EX1014], Puck, p. 10., FIG. 9. As a result, Puck fails to teach the limitations of the Challenged Claims reciting a “ground engaging propulsion structure.”

276. With respect to Ground 5, Petitioner’s expert asserts that a POSITA would **add** Bryham’s wheels to the manure agitation boat disclosed in Puck and controlling Bryham’s wheels using remote-control as generally discussed in Bennett-II; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

277. 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:

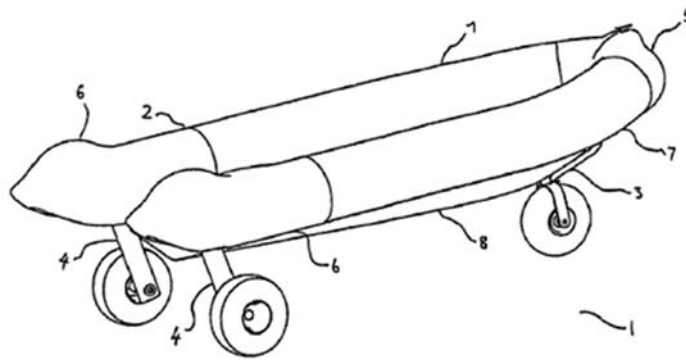


Figure 1

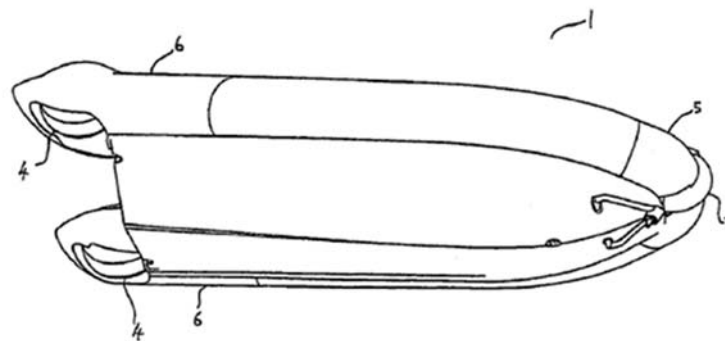


Figure 2

[EX1015], Bryham, p. 2, FIGS. 1 and 2.

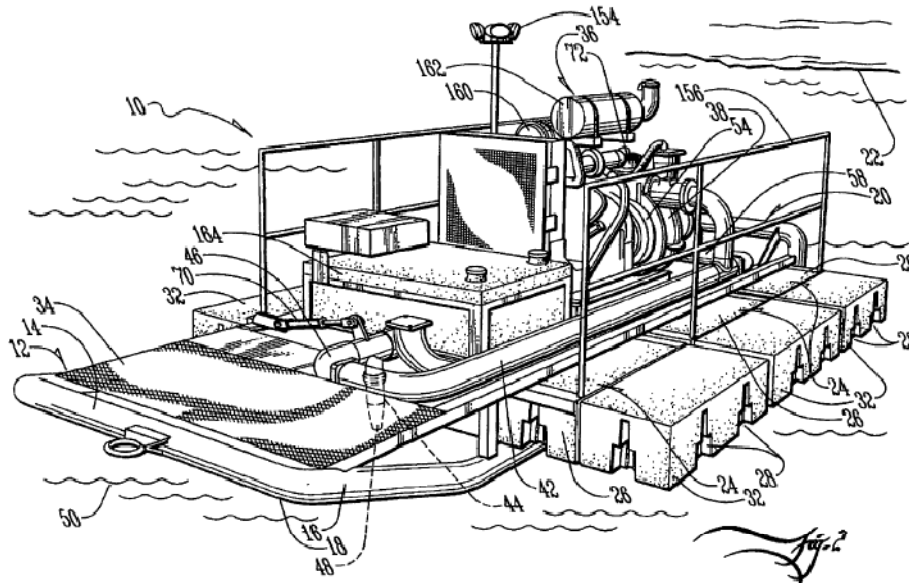
278. Unlike Bryham, Puck is more of a barge compared to a traditional boat and is constructed from modular floating dock sections 26 that are placed in a plurality of receiver slots 24 in a ladder-like frame 14:

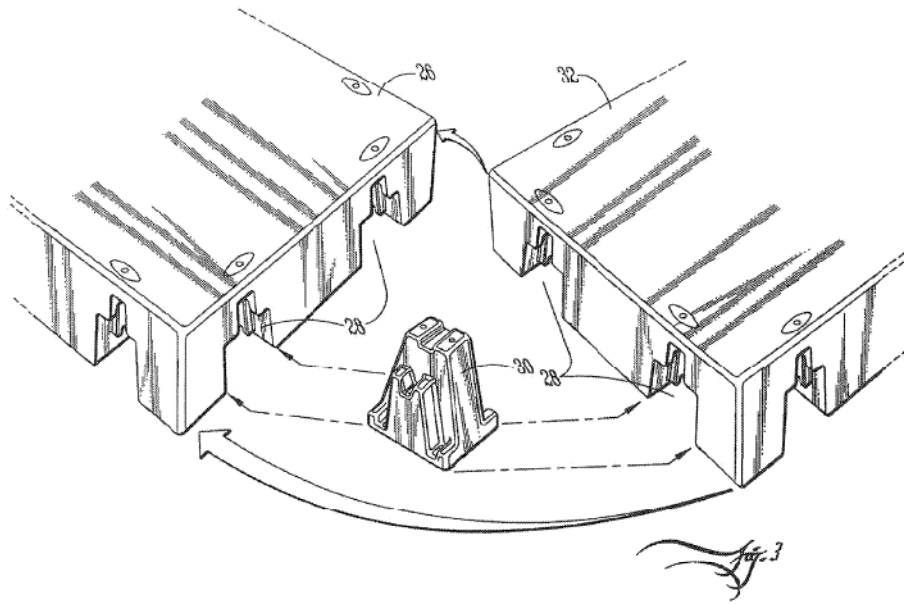
(10) from a manure lagoon (22). (FIGS. 1-2). The frame (14) defines a plurality of receiver slots (24) into which are provided modular dock sections (26), such as those known in the art. In the preferred embodiment, the dock sections (26) are 1000 series dock components manufactured by Connect-A-Dock, Inc. of Atlantic, Iowa.

[0023] The modular dock sections (26) are provided with connector slots (28) to fit into interlocking mating engagement with connector pins (30). The connector pins (30) allow the modular dock sections (26) to connect to additional dock sections (32) in a manner such as that known in the art. (FIGS. 1 and 3). The use of interlocking additional dock sections (32) allows for the buoyancy of the vessel (12) to be increased and allows the additional dock sections (32) to be removed to reduce the overall width of the agitator (10) for transport and storage. If desired, pontoons, inflatable components or any

[EX1014], Puck, ¶¶22-23 (highlighting added).

279. The modular dock sections 26 in Puck are held together with connector pins 30:





[EX1014], Puck, pp. 3-4, FIGS. 2 and 3.

280. In view of this disclosure, a POSITA would not reasonably expect that Bryham's wheels could be successfully added to Puck's vessel. A POSITA would understand that adding Bryham's wheels would interfere with the modular dock sections required in Puck for floatation as the two could not occupy the same space.

281. In my opinion, a POSITA would also understand that Puck's vessel is not designed so that its entire weight can be carried at 3 (one in the front and two in the rear) or 4 discrete points as it would be if Bryham's wheels were added.

282. Puck's vessel is designed so that its weight is evenly distributed when it is on shore and on the trailer. The connector pins that hold the modular dock sections together slide into slots in the modular dock sections from the bottom and the connector pins are wider at the bottom than they are at the top. A POSITA would understand that this design gives the connection between the modular dock sections good weight carrying ability when they are floating, but it is not designed to hold the modular dock sections together when they are suspended above the ground, as they would be if Bryham's wheels were added.

283. Finally, Petitioner's expert previously acknowledged that manure lagoons – the

environment in which Puck's vessel operates – often have steep and slippery embankments. *See Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2024-00004, EX1004, ¶336 (PTAB Oct. 13, 2023); *Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2023-01161, EX1004, ¶334 (PTAB June 23, 2023). And Petitioner's expert acknowledges here a similar problem of "launching vessels in area lacking launching infrastructure." [EX1004], Winkel Decl., ¶280. But Petitioner's expert does not explain why a POSITA would have expected the 3-wheel design disclosed in Bryham to provide Puck's vessel with the capability of traversing these steep and slippery embankments.

284. 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.

285. 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 might not get hurt if a remote-control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. This tilting risk would dissuade a POSITA from adding Bryham's wheels to the remote-controlled manure

agitation boat disclosed in Puck.

286. In my opinion, the modifications that Petitioner and Dr. Winkel advocate whereby the single, front wheel of Bryham would be discarded and replaced by a duplicate set of Bryham's rear wheels at the front corners of Puck's vehicle require much more than a routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint. In my opinion, a POSITA would not have arrived at the claimed arrangement using the Puck, Bryham, and Bennett-II references as a starting point because none of those references teach or suggest the modifications Petitioner proposes (i.e., deleting Bryham's single, front wheel and placing a duplicate set of Bryham's rear wheels at the front corners of a vehicle).

287. The generalized statement in paragraph [0043] of Bennett-II that its "vehicle 10 may be operated by remote control" would not inform a POSITA that Puck's remote-control system could successfully be modified to control Bryham's 3-wheeled ground engagement system, let alone a modified version of Bryham's ground engagement system with two sets of Bryham's rear wheels, because Bryham's ground engagement system is substantially different from Bennett's drivetrain. Moreover, a POSITA would consider Bryham's ground engagement system to be even less stable and provide considerably worse traction and steering than the pair of tracks disclosed in Bennett-II. As a result, a POSITA would have greater reservations in adding remote control to Bryham's ground engagement system than adding remote control to Bennett-II.

H. Petitioner's Combination of Puck with Bryham and Bennett-II to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

288. As conveyed above, combining Puck with Bryham and Bennett-II to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to Puck – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to relocate Puck's slurry pump

from its location high on the vehicle to a location where it would be immersed in the liquid manure when the vehicle is floating – even though there is no teaching or suggestion of this.

- Second, a POSITA would need to find motivation to discard Bryham's single front wheel, and add two sets of Bryham's rear wheels to the front and rear corners of Puck's boat – even though there is no teaching or suggestion of this.
- Third, a POSITA would need to find motivation to remove the front and rear buoyant elements on each side of Puck's boat to accommodate Bryham's wheels, in order to have the remaining middle buoyant element on each of the right and left sides of the boat positioned between the new front and rear wheels on each side of the boat. And a POSITA would have to do all of this with the knowledge that serious stability problems would likely ensue with no buoyant elements position at the rear of the vehicle.
- Fourth, a POSITA would need to find motivation to discard the electric wheel motors disclosed in Bryham and replace them with four variable speed hydraulic motors, one for each wheel, and then modify Puck's hydraulic system, which was only designed to move linear actuators, so that it could also be used to power hydraulic motors to drive the new wheels from Bryham.
- Fifth, a POSITA would need to find motivation to modify Puck's wireless remote control, which was only designed to control the engine and nozzles, so that it could also independently control the speed and/or direction of the new Bryham wheels – even though there is no teaching or suggestion of how Puck's remote control system could be modified to control Bryham's wheels – and even though there is no teaching or suggestion of how Bennett-II's generically disclosed remote control system for its tracked vehicle could be modified to control Bryham's retractable.

289. In my opinion, no POSITA would find motivation to take these leaps to arrive at the '708 Patent's Challenged Claims. A POSITA would only arrive at the '708 Patent's Challenged Claims by using the Challenged Claims as blueprint.

290. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, and 23 are nonobvious over the Puck-Bryham-Bennett-II Combination.

XVI. GROUND 6: CLAIMS 1-38 NOT ARE OBVIOUS OVER TRUXOR AND YOON OR CARRIER IN VIEW OF MANURE-MANAGER

291. In the following sections I examine various claim elements of the '708 Patent and explain why at least independent claims 1, 17, 21, and 23 are nonobvious over the combination of Truxor in view of Carrier or Yoon, in further view of Manure-Manager (the "Truxor-Manure-Manager Combination"). Claims 8-16 depend from claim 1, claims 18-20 depend from claim 17, claim 22 depends from claim 21, and claims 24-38 depend from claim 23, and therefore are nonobvious over the Truxor-Manure-Manager Combination for at least the same reasons.

A. The Truxor-Manure-Manager Combination Fails to Disclose or Suggest Buoyant Elements Positioned Between the Front Wheel and Rear Wheel on Each Side of the Vehicle as Required by Independent Claims 17, 21, and 23

292. Independent claims 17, 21, and 23 of the '708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel.

293. Claim 17 of the '708 Patent requires "a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel." Similarly, claim 21 specifies that "the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel." And claim 23 recites "a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element

between [the]a second front wheel and [the]a second rear wheel.”

294. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle” and independent claim 21 recites “a first buoyant element on a first *side* of the vehicle body and a second buoyant element on a second *side* of the vehicle body” (emphasis added).

295. In my opinion, these claim elements are not disclosed by the Truxor-Manure-Manager Combination.

296. Truxor discloses a vehicle with tracks:

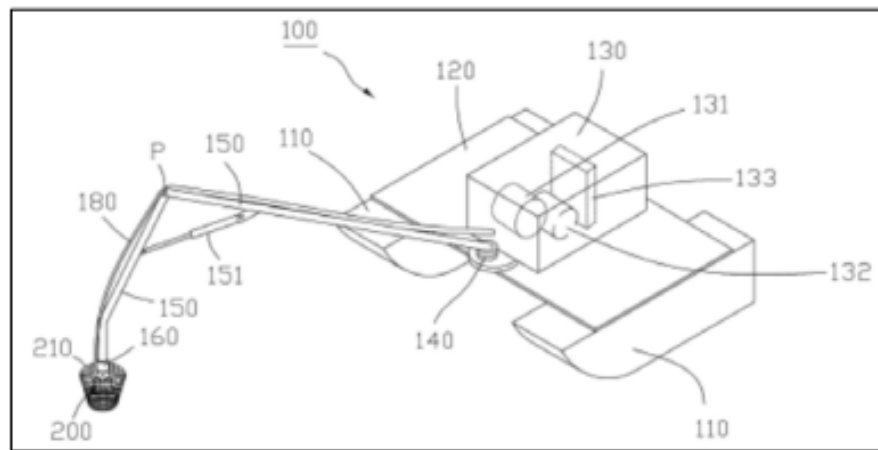


[EX1006], Truxor, p. 3. Neither Petitioner nor Dr. Winkel refutes this point. Petition, p. 48, [EX1004], Winkel Decl., ¶215. Because Truxor discloses tracks rather than wheels, Truxor does not teach “a first front wheel and a first rear wheel” or “a second front wheel and a second rear wheel” as required by claims 17, 21, and 23.

297. To make up for this deficiency, Petitioner and Dr. Winkel assert that a POSITA would substitute the vehicle tracks of Truxor for wheels. Petition, p. 48, [EX1004], Winkel Decl.,

¶215. But even if a POSITA were so motivated, the resulting combination does not meet the additional requirement of claims 17, 21, and 23, where first and second buoyant elements are positioned in the space between the front wheel and rear wheel on each of the right and left sides of the vehicle body.

298. To reach the limitations of claims 17, 21, and 23, Petitioner and Dr. Winkel point to the vehicle body of Truxor, which is described as being made of aluminum pontoons, and the pontoons 110 disclosed in Yoon and illustrated below:



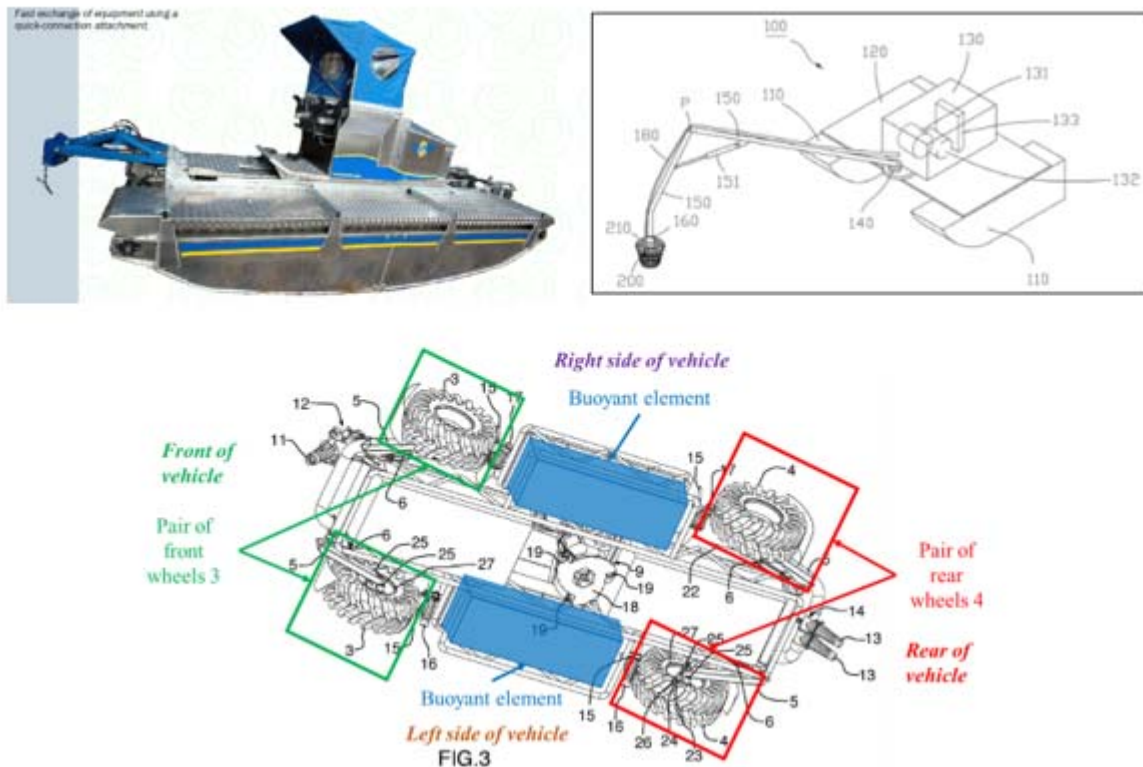
[EX1011], Yoon, p. 2, FIG. 2.

299. Petitioner and Dr. Winkel then make an unsupported leap that the claimed configuration is obvious, even though it is not disclosed in or suggested by the references themselves:

A POSA would have understood that the natural location in which to arrange the wheels on the vehicle of Truxor would have been to position a pair of wheels toward the front and a pair of wheels toward the rear of the vehicle with each pair of wheels symmetrically arranged with one wheel on either side of the vehicle to promote vehicle stability. This arrangement would result in one pontoon being located between the right pair of wheels and another pontoon being located between the left pair of wheels.

[EX1004], Winkel Decl., ¶215; *see also* Petition, p. 48. I disagree with this conclusion that a POSITA would have understood the claimed arrangement of buoyant elements and wheels to be obvious.

300. According to Petitioner and Dr. Winkel, a POSITA looking to add wheels to the vehicles described in Truxor and Yoon would naturally end up with a vehicle where the pontoons disclosed in Truxor or Yoon are positioned between the front and rear wheels and would therefore arrive at the claimed arrangement:



[EX1006], Truxor, p. 2; [EX1011], Yoon, p. 2, FIG. 2; [EX1001], '708 Patent, p. 5, FIG. 3 (annotations in color added).

301. But the record does not support the argument that such a modification would be obvious or the “natural location” of the wheels and buoyant elements as Petitioner and Dr. Winkel argue.

302. First, the pontoons disclosed in Truxor and Yoon run the entire length of the vehicle body. So wheels could not be added in front of and behind these pontoons without shortening the pontoons or extending the frame of the vehicle body out beyond the front and rear ends of the pontoons. In either case, the fore and aft stability of the vehicle would be negatively affected,

which is why the pontoons in Truxor and Yoon extend entire length of the vehicle body. So a POSITA would not select the claimed arrangement where buoyant elements are positioned between the front wheel and rear wheel on each of the right and left sides of the vehicle as the obvious design choice and in fact would have reasons for selecting other arrangements. The Patent Owner solved fore and aft stability by adding buoyant elements at the front and rear of the vehicle in addition to the first buoyant element positioned between the front wheel and the rear wheel on each of the right and left sides of the vehicle body.

303. Second, the record actually demonstrates that if the Truxor vehicle where converted from tracks to wheels, then the “natural location” for the pontoons would be outboard of the wheels rather than between them. The SenwaTec reference ([EX1012], SenwaTec) is instructive, as SenwaTec offered its vehicle in a track-equipped version and a wheeled version. Notably, the wheeled version of the vehicle disclosed in SenwaTec included pontoons installed outboard of the wheels:



A compact muscular vehicle with tracks



6-Wheel driven unit with stabilizer pontoons

[EX1012], SenwaTec, p. 1

This evidence shows that positioning the pontoons disclosed in Truxor or Yoon outboard of the wheels would be the “natural location” a POSITA would have considered if they were motivated to convert Truxor from tracks to wheels and add buoyant elements to the vehicle. The arrangement of elements that the Petitioner and Dr. Winkel argue impermissibly uses the ‘708 Patent as a blueprint to arrive at the subject matter recited in claims 17, 21, and 23 and is inconsistent with the

evidence in the record that shows how others have actually modified their amphibious vehicles.

304. Petitioner's reliance on Manure-Manager is limited to its disclosure of manure lagoon pumps. Petitioner does not cited Manure-Manager as teaching the claimed arrangement where a buoyant elements is situated between the front wheel and rear wheel on each of the right and left sides of the vehicle body. As a result, the Truxor Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17, 21, and 23 of the '708 Patent.

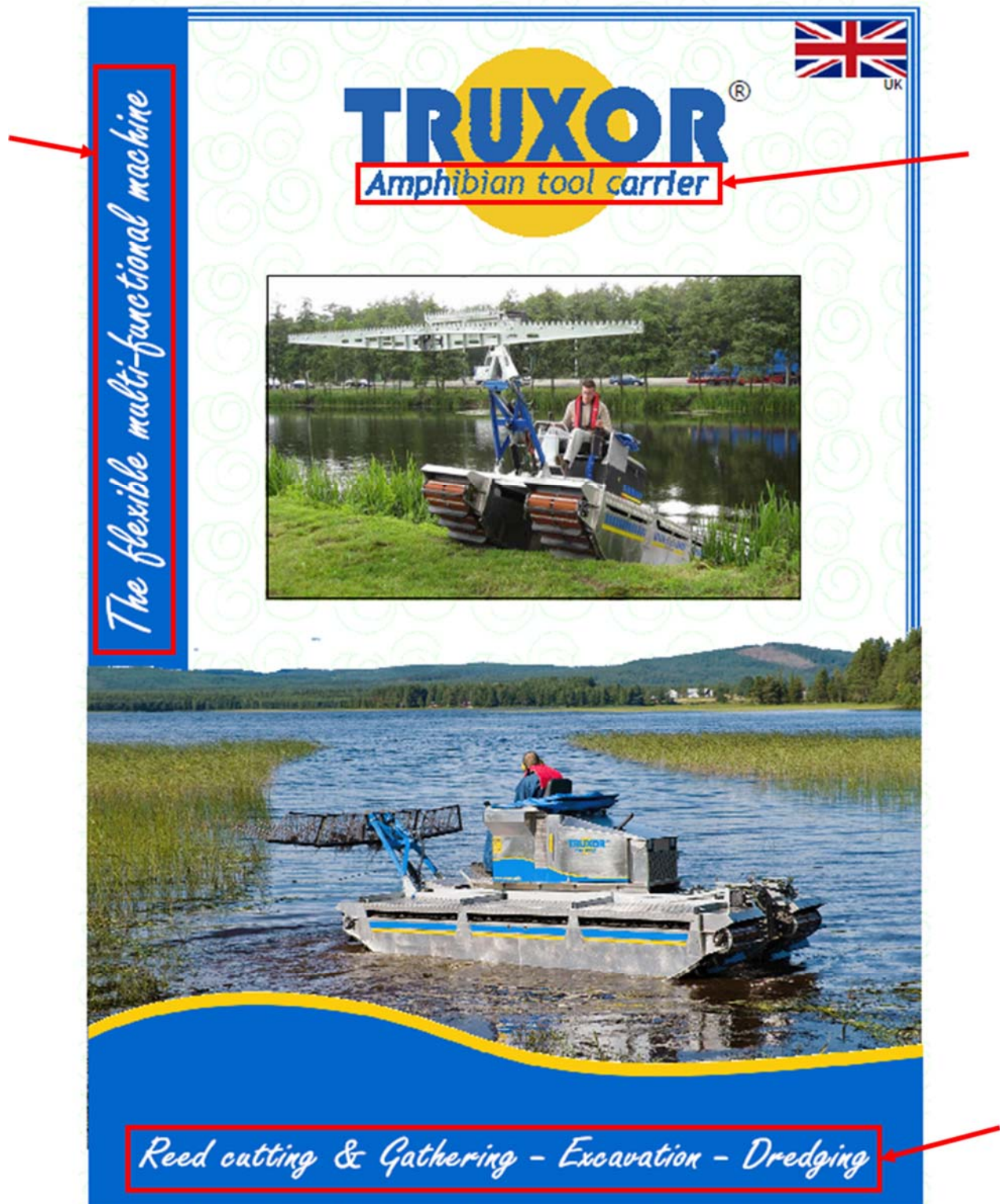
B. A POSITA Would Not Have Had a Motivation to Combine Truxor, Yoon or Carrier, and Manure-Manager

305. Petitioner and Dr. Winkel argue that a POSITA seeking to select an improved pump for use on the Truxor "multi[-]functional machine" would replace Truxor's Doro Pump with Nuhn's G-Force Vertical Pit Pump because Nuhn's dual outlet pump design was touted as having improved efficiency and performance:

326. A POSA looking to select an improved pump for use on the Truxor "multi[-]functional machine" would have been motivated to use Respondent's Pump, given the various teachings in the literature, often alongside Respondent's own pump advertisements, touting the efficiency and durability benefits of such dual outlet pumps. A POSA would have had a reasonable expectation of success in using Respondent's Pump based on it being vehicle mounted and powered.

[EX1004], Winkel Decl., ¶326 (highlighting added); *see also* Petition, p. 96. I respectfully disagree with this conclusion.

306. The Truxor marketing brochure ([EX1006], Truxor) does not convey to a POSITA a vehicle that pumps manure. Instead, the Truxor marketing brochure ([EX1006], Truxor) describes a manned amphibious vehicle for "Reed cutting & Gathering – Excavation – Dredging":

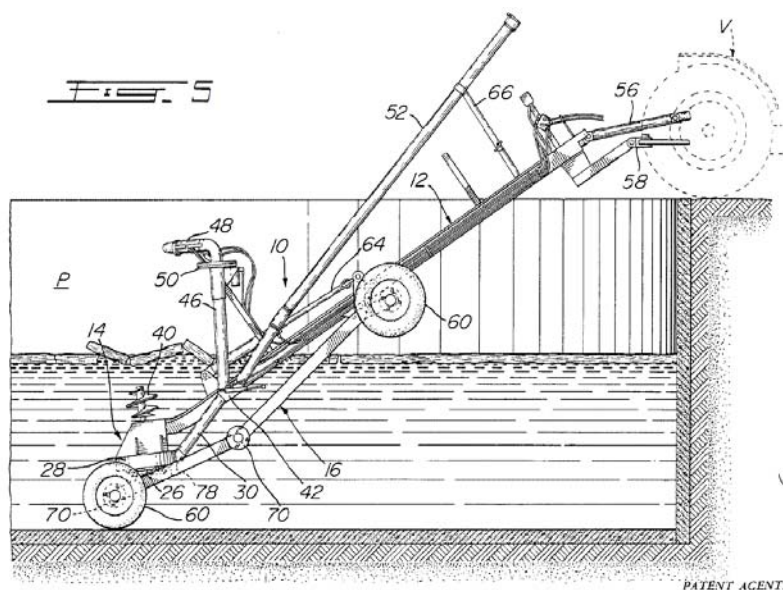


[EX1006], Truxor, p. 1 (red annotations added).

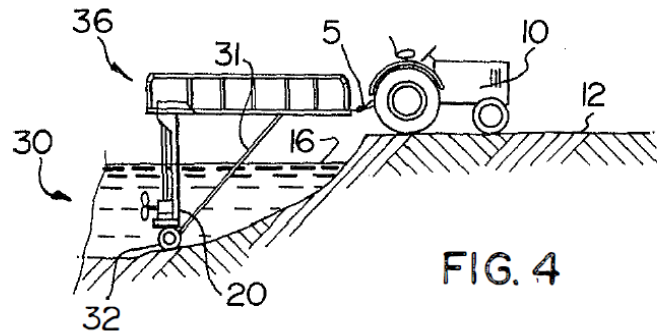
307. Petitioner and Dr. Winkel even concede that “Truxor describes a ‘multi[-

]functional machine capable of dredging....' EX1006, 3." Petition, p. 92; *see also* [EX1004], Winkel Decl., ¶322. A POSITA would not be motivated to replace Truxor's dredge pump with Nuhn's manure lagoon pump because there is zero evidence that Nuhn's manure lagoon pump would work in dredging applications. In other words, a POSITA would not be motivated to replace Truxor's dredge pump with a pump that was unproven in dredging applications because a POSITA would expect that doing so would likely destroy the dredging functionality of the Truxor vehicle – which is the primary purpose the Truxor vehicle was designed and built to perform.

308. Pumps and pumping vehicles that are used for manure lagoon agitation are designed such that the pump intake is positioned below the surface crust on a manure lagoon, but well above the bottom of the lagoon. Stated differently, manure lagoon agitation pumps are designed to be placed and operated in the middle of the “water” column. This positioning of manure lagoon pumps is described throughout the art of record:



[EX2017], Depault-II, p. 17.



[EX2010], Houle, p. 2.



Figure 9. To prevent intake of floating debris, suspend an irrigation pump intake about 2 feet below the surface of a lagoon.

[EX1038], Pfost, MU Guide on Land Application Equipment for Livestock and Poultry Manure Management, p. 5.

309. There are two primary reasons why manure lagoon agitation pumps are designed to be placed and operated in the middle of the “water” column. The first reason is that by placing the pump inlet away from the surface crust and the bottom sediment, the pump is less likely to become clogged. The second reason for placing the pump inlet in the middle of the “water” column is because most manure lagoons have a liner to prevent manure seepage into groundwater. It is therefore undesirable to position a pump at the bottom of a manure lagoon because doing so could damage the liner – leading to an environmental hazard.

Agitation in a plastic-lined satellite storage is difficult with conventional agitation equipment, since chopper-agitators will tear a plastic storage liner when lowered down a bank into the pit. A recommended agitation method for satellite storages is to redirect the discharge from the pit's pump through a 1 1/2-inch nozzle onto the surface of the storage. A permanent or semipermanent hydrant can be fabricated in a shop and mounted at one or both ends of a satellite storage. One such nozzle may be sufficient to agitate a small storage. Larger satellite storages may require two nozzles directed into the storage for proper agitation. When using nozzle agitation, high-pressure irrigation pumps should be throttled back to low speed to reduce the risk of injury or damage to exposed portions of the plastic liner.

[EX1037], NRAES Liquid Manure Application Systems Design Manual, p. 64 (highlighting added). It is the jets/spray of liquid manure being discharged from a manure lagoon agitation pump / manure lagoon agitation vehicle and the circulation of manure within the lagoon that are designed to break-up the surface crust and bottom sediment in a manure lagoon. Manure lagoon agitation pumps, whether tractor-mounted or mounted in a manure lagoon agitation vehicle, are not designed to pull/suck up the bottom sediment in a manure lagoon.

310. This stands in sharp contrast to dredge pumps, which are designed to pull/suck up the bottom sediment in a body of water. This goes to the different purpose of dredging compared to manure lagoon agitation. Dredging is performed to increase the depth of a waterway by pulling/sucking up bottom sediment. The primary purpose of manure lagoon agitation is to break-up the surface crust and bottom sediment and mix the contents of the entire manure lagoon to generate as near a homogeneous mixture of liquid manure in the manure lagoon as possible.

311. A POSITA would appreciate these differences and with that understanding in mind would not think to replace the dredge pump on Truxor's multi-purpose dredging vehicle with a manure lagoon agitation pump that was not designed, advertised, or proven for dredging operations because the result of the combination would likely ruin the dredging capabilities of the Truxor vehicle. The references themselves do give a reason for the proposed substitution. The SenwaTec reference itself [EX1012, SenwaTec] makes no reference to manure lagoons or manure lagoon agitation. If the teachings of EX1029-1031 (Frog As a Role Model Article (German), Frog As a

Role Model Article (English Translation), SenwaTec Video and Screenshots) are even to be considered, at best they suggest using the SenwaTec vehicle in a municipal wastewater pond – not a manure lagoon with a high straw content. And there is no teaching or suggestion in Manure-Manager that manure lagoon agitation pumps are suited for dredging use. Indeed, “dredging” is not among the applications Fisher Pumps lists in its Manure Manager advertisement:

The advertisement is divided into two main sections. The top section features a large red lagoon pump mounted on a trailer, being towed by a tractor. Three circular callouts highlight specific features: 'TRIPLE PORTED LOFTED HOUSING', 'RADIO REMOTE CONTROL' (showing a hand holding a remote), and 'HEAVY COMMERCIAL OUTRIGGERS'. Performance specifications are listed as '7000 gal / min @ 150 Hp' and '5500 gal / min @ 95 Hp'. A yellow starburst with the word 'NEW' is placed over the pump. The bottom section is titled 'FISHER PUMPS' and lists applications: 'IRRIGATION.....MANURE HANDLING.....FLOOD CONTROL.....AERATION'. It describes the pumps as low maintenance, submersible centrifugal, and offers various design features like double discharge design, all bearings above water level, and no priming. Several pump models are illustrated with labels: 'Vertical Self Bolt Drive Pump', 'Electric Drive Aeration Pump', 'Tractor PTO Trailer Pump', 'Vertical Self Direct Drive Pump', 'Electric Drive Floater Pump', and 'Portable Hydraulic Screen Pump'. Contact information for Fisher Pumps is provided, including address, phone, fax, and website. A red arrow points from the 'NEW' starburst to the 'FISHER PUMPS' section. A red box highlights the applications list. A red arrow points from the 'FISHER PUMPS' section to the 'Manure Manager' reference in the text below.

=NUHN=

TRIPLE PORTED
LOFTED HOUSING

RADIO REMOTE
CONTROL

HEAVY COMMERCIAL
OUTRIGGERS

7000 gal / min @ 150 Hp
5500 gal / min @ 95 Hp

NEW

**HEADER SERIES
LAGOON PUMP**

95 Hp tractor shown

1-877-837-7323 www.nuhn.ca nuhnind@nuhn.ca

FISHER PUMPS

IRRIGATION.....MANURE HANDLING.....FLOOD CONTROL.....AERATION

Fisher Pumps is a low maintenance, submersible centrifugal
with a variety of pump styles to meet your needs!

Some design features are:

Double discharge design equalizes pressure & maximizes horsepower!
All bearings above water level...No oilers to fill daily!
Constructed of 1/4" & 3/8" steel with heavy walled tubing
On site test pit to insure performance prior to shipment!
No Priming....Self Draining....No Seals

Visit us at World Dairy Expo
Booths #EH-S07 & S08

Manufactured by:
Fisher Pumps
2024 E. 8th St.
Greeley, CO. 80631
PH# 970-353-6962 Fax# 970-353-0839
Web Site : www.fisherpumps.com

Vertical Self Bolt
Drive Pump

Vertical Self Direct
Drive Pump

Electric Drive Aeration Pump

Electric Drive Floater Pump

Tractor PTO Trailer Pump

Portable Hydraulic Screen Pump

Manure Manager • July/August 2011 23

[EX1020], Manure-Manager-II, p. 23 (red arrow and box annotation added).

312. For these reasons, it is my opinion that a POSITA would not attempt to make the alleged combination where the Doro dredge pump of Truxor is deleted and replaced with the Nuhn G-Force Vertical Pit Pump advertised in the Manure-Manager reference.

C. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining Truxor, Yoon or Carrier, and Manure-Manager

313. It is also my opinion that a POSITA would not foresee a reasonable expectation of success in making the alleged combination where the Doro dredge pump of Truxor is deleted and replaced with the Nuhn G-Force Vertical Pit Pump advertised in the Manure-Manager reference.

314. The Doro dredge pump disclosed in Truxor is mounted at the end of an articulating boom arm at the front of the Truxor vehicle. As a result of this mounting arrangement, the Doro dredge pump is powered by hydraulics. In other words, the structure of the Doro pump is particularly configured so that it may be connected to hydraulic lines and driven by a flow of hydraulic fluid passing through the hydraulic lines.

315. By contrast, the dual outlet pump in Nuhn's G-Force Vertical Pit Pump is powered by a driveshaft that is mechanically coupled to the power-take-off (PTO) of a tractor:



[EX1019], Manure-Manager, p. 27.

316. The Truxor vehicle lacks a PTO to provide power to its attachments. As a result, a POSITA would not have had a reasonable expectation of success that Nuhn's G-Force Vertical Pit Pump, which includes a mechanical coupling, driveshaft, and mechanical gearbox, could be connected to and effectively driven by Truxor's hydraulics.

317. Furthermore, the amphibious vehicle disclosed in Truxor and its tool attachments are designed to be operated by an on-board operator. As a result, Truxor fails to teach the limitations of the Claims 1, 17, and 23 that recite "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 at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and (3) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon." Truxor also fails to teach the limitations of Claim

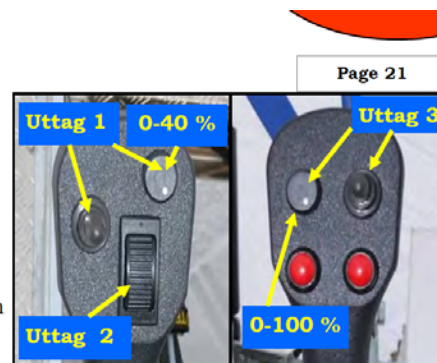
21 that recites “a wireless remote control configured to enable an operator remote from the vehicle to: (1) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; (2) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon; and, (3) control a flow of liquid manure from the liquid manure pump.”

318. To address this deficiency, Petitioner and Dr. Winkel 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; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

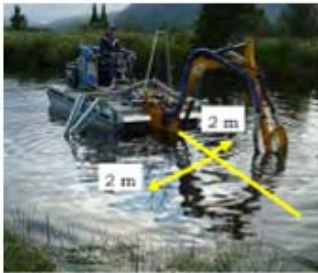
319. Truxor discloses two multi-function joysticks that are used to control the positioning and operation of the submersed pump:

The Doro Pump

The Doro pump is regulated with the help of crossbar switches. The left joystick adjusts the screw feed = socket 1. The rotation can be max. 40 %. The upward and downward movement of the telescope extension is controlled using socket 2 (accessory). The right joystick with socket 3 regulates the rotation speed of the pump, which can be 100 % in most cases.



[EX1007], Arnoldsson Decl. Ex. H, p. 126.



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.



Hydraulic-driven tools mounted on Doro Digger require different oil flows.

Socket 3 that determines the oil flow/pressure to the tools is regulated using the right joystick. The switch (1) controls on/off/back.

The knob (2) adjusts the oil flow. Turn the control clockwise to end position for maximum oil flow (100%).

The rotation speed of the diesel motor also affects the maximum flow of the hydraulic pump. Higher rotation speed is required when many hydraulic functions are running at the same time.

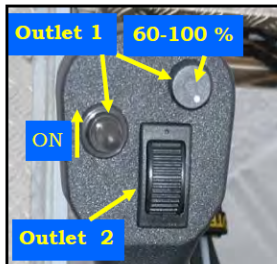
Recommended oil flows for the different tools (2):

Doro Pump V3 80-100 %

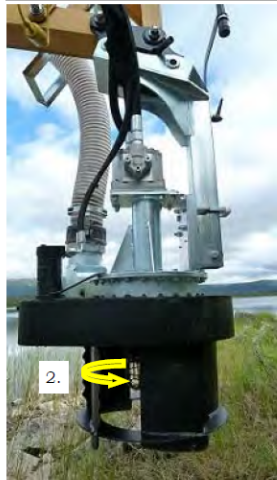
Slaghack Orsi 80-100 %

Doro Cutter ESM 1900 40-60 %

Doro Mill 50-70 %



The controls on the left joystick regulates the oil flow to Doro Digger. The toggle switch activates the oil supply and the knob regulates the oil flow. Turning the control counter-clockwise reduces the oil flow so that the speed of the swing cylinders decreases (1). Recommended setting (60-100%)



Socket 2 adjusts the feed to the pump intake (2). When socket 2 is used, the switch (4) on the panel must be in ON position to achieve the hold function. When the roll switch (3) is moved upwards, the feed wheel will start (2). To stop the wheel, pull the roll switch downwards.



[EX1007], Arnoldsson Decl. Ex. H, pp. 128-129 (yellow highlighting added).

320. The difficulties with converting hydraulic controls of this type to wireless remote control would be known to a POSITA. Teleoperation is a term often used when a machine or robot is operated from a distance (aka remote control). The difficulties of operating an excavator-like machine system in a teleoperation type environment lie from delay (latency) in controls, lack of tactile feedback (which is provided through onboard hydraulic controls), and an overload of visual information. [EX2028], Practical Evaluation of a Control Concept, pp. 1, 4-6. The human machine interface (HMI) of hydraulic excavator controls has not evolved much in the last couple of decades and therefore does not lend itself to easily being converted to teleoperation. [EX2025], Excavator Human-Machine Interface Concepts, p. 3. In the 2013-2014 time period, commentators explained that further studies and development was needed to convert these types of manual excavator-like controls to wireless remote-control. [EX2025], Excavator Human-Machine Interface Concepts, p. 8. Further, ASME papers show this was still an area requiring further development and new control systems in 2022. [EX2028], Practical Evaluation of a Control Concept, pp. 1-2, 4-6.

321. Petitioner's expert has not shown how remote control over the various functions of the Truxor vehicle and Doro Pump could be implemented, how a POSITA could overcome these difficulties when making the Truxor Combination, or that the resulting combination would actually work in the manure lagoon environment.

322. Even today, some ten years later, there is no evidence that a remote-control option has been added to the Truxor vehicle. On October 1, 2023, I visited the Truxor website at <https://truxor.com>. I was unable to find any reference to any features or options that indicated remote control of their vehicles is available as an option for their products.

323. On October 2, 2023, I took screenshots from the Truxor website and compiled them as EX2026. I therefore certify that the screenshots shown in EX2026 are true and correct images of the Truxor website identified in the paragraph above. The fact that Truxor has not, to this day, added a remote control option to its vehicles provides evidence that this would not be a simple feat

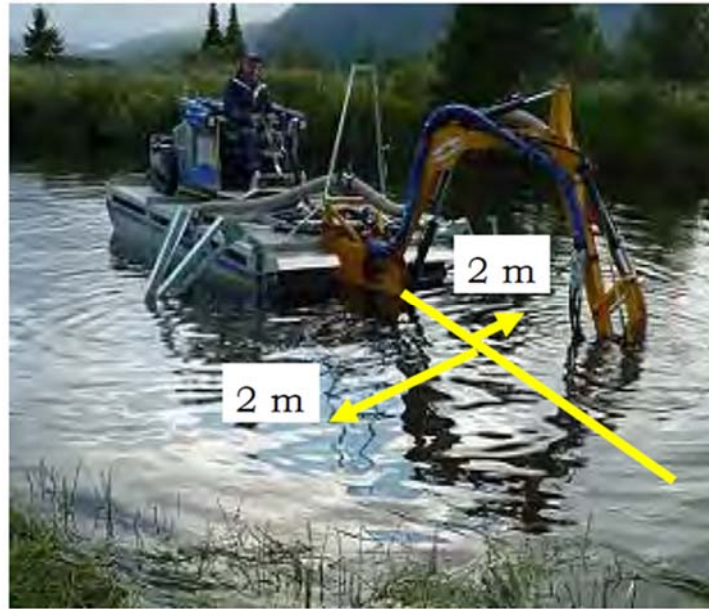
that could be accomplished by routine experimentation.

324. A POSITA would also expect that remotely controlling the positioning and operation of a submerged pump to be problematic given the difficulty observing its operation from a remote location.

325. Truxor's elevated seating position demonstrates the importance of visual observation of the pump located at the end of Truxor's boom arm:



[EX1007], Arnoldsson Decl. Ex. E, p. 60 (red annotations added).



[]EX1007, Arnoldsson Decl. Exh. H, p. 128.

326. The vehicle disclosed in SenwaTec is similar to the vehicle disclosed in Truxor, but has a seating position that is below the top deck of the vehicle. As a result, operators of the SenwaTec vehicle were forced to stand to get a better view of the submersed pump:





[EX1012], SenwaTec, p. 2 (red annotations added). 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 from a remote location.

327. Truxor's operator's manual also warns of known "a tilting risk." [EX 1007], Arndolsson Decl. Ex. H, p. 128. In fact, Petitioner's same expert Dr. Winkel here acknowledged Truxor's tilting (i.e., rollover) risk in the proceedings for the related '835 and '425 Patents, as shown below. In fact, Petitioner's same expert Dr. Winkel here acknowledged Truxor's tilting (i.e., rollover) risk in the proceedings for the related '835 and '425 Patents, as shown below.

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

Bazooka Farmstar, LLC v. Nuhn Industries, Ltd., IPR2024-00004, EX1004, ¶249 (PTAB Oct. 13, 2023) (yellow annotations added); *see also Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2023-01161, EX1004, ¶257 (PTAB June 23, 2023).

328. This tilting risk would dissuade a POSITA from adding remote control functionality to Truxor 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 might not get hurt if a remote control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right

the vehicle. Petitioner's expert completely overlooks Truxor's known instability problem from a reasonable expectation of success standpoint.

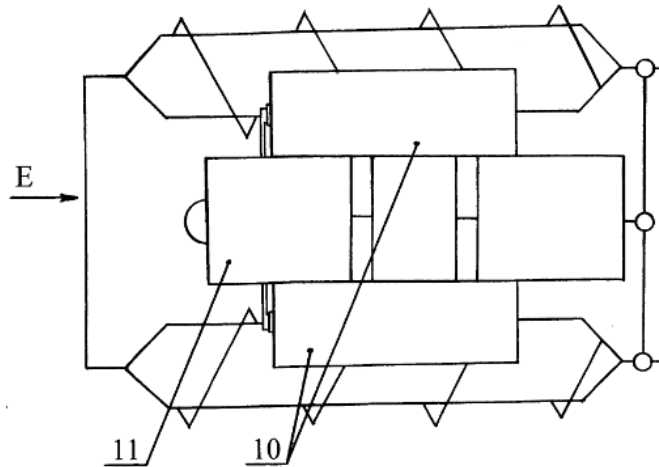
329. Manure lagoons typically have steep embankments that can be covered in manure, mud, sand, and/or ice and are therefore extremely slippery. See [EX1004], Winkel Decl., ¶280 (acknowledging "the problem of launching vessels in area lacking launching infrastructure"). A POSITA would recognize that Truxor's 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.

330. The reliance on Melnikov by Petitioner's expert is also misplaced. Melnikov actually supports my opinion that a POSITA would not have had a reasonable expectation of success in adding wireless remote-control functionality to Truxor because that is not what Melnikov did.

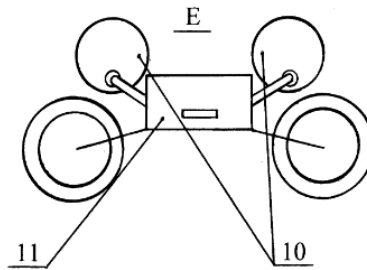
331. Melnikov discusses Truxor in its "Background" section as prior art and notes the drawback that it requires an onboard operator:

Truxor — a multifunctional amphibian machine manufactured by the Swedish company *Dorotea Mekaniska AB* is known (www.doroteamekaniska.se). The amphibian is a pontoon machine on caterpillar tracks operated by one operator. On the machine, an oil skimmer, cultivator, excavator, rakes may be quickly mounted as hydraulic attachments. The machine is easily placed on a trailer, which makes it mobile and reduces transport costs. However, **the disadvantages of the machine may include the presence of an operator located on the machine itself**, which limits the use thereof in conditions dangerous for humans.

[EX1028], Melnikov Trans., p. 4 (highlighting added). Significantly, 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:



Фиг. 11



Фиг. 12

[EX1027], Melnikov, p 7.

332. These major differences continue with Melnikov's pump, which is illustrated as an **onboard** pump for pumping liquid biopreparations and mineral fertilizers from the containers 10 to the spray system 11:

The machine for applying liquid biopreparations and liquid mineral fertilizers includes containers 10 and a pump with a spray system 11 (Fig. 11) mounted on the carrier vehicle.

[EX1028], Melnikov Trans., p. 5 (highlighting added).

333. The device in Melnikov does not pose the same problem as the Truxor Combination, where controlling the positioning and operation of a submerged pump would be problematic given the complexity of the controls and difficulty observing its operation from a remote location.

334. Melnikov clearly knew of the Truxor vehicle and clearly knew that its requirement for an onboard operator was a drawback. If it were both obvious and reasonably feasible to add remote control functionality to Truxor, that is precisely what Melnikov would have done. But Melnikov didn't do that and instead created a device that would be far simpler to operate as a remote-control vehicle.

A POSITA would understand that just because *some* vehicles can be remote controlled does not mean that *all* vehicles can be remote controlled. Thus, in my opinion, a POSITA would not have had a reasonable expectation of successfully adding remote-control functionality to Truxor to produce an amphibious remote-controlled vehicle that could operate in a manure lagoon environment without tipping.

D. Petitioner's Combination of Truxor with Carrier or Yoon and Manure-Manager to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

335. As conveyed above, combining Truxor with Carrier or Yoon and further with Manure-Manger to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to Truxor – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to replace Truxor's Doro *dredge* pump with the liquid *manure* pump advertised in Manure-Manager – even though (a) there is no teaching or suggestion of manure pumping applications in Truxor's literature, (b) Nuhn's pump was unproven in dredging and likely to destroy Truxor's dredging functionality, which is its primary purpose, and (c) Truxor lacks the PTO necessary to drive Nuhn's G-Force Vertical Pit Pump and there is no evidence that Nuhn's pump could be easily converted to hydraulic drive.
- Second, a POSITA would need to find motivation to replace Truxor's track on

with front and rear wheels on each side of the vehicle – even though the tracks work just fine for Truxor’s purpose.

- Third, a POSITA would need to find motivation to either (a) chop off length from Truxor’s pontoons, which run the entire length of the vehicle, to shorten them or (b) extend the length of the vehicle – all in order to position a pontoon between the new and unnecessary front and rear wheels on each side of the vehicle. And a POSITA would need to do all of this even though the prior art teaches positioning the pontoons outboard of the wheels, which is the most logical solution.
- Fourth, a POSITA would need to find motivation to add wireless remote control to Truxor, even though it would be extremely difficult to convert Truxor’s complex joysticks and hydraulic controls to wireless remote control – only to end up with a pumping vehicle that is difficult if not impossible to control / operate from a remote location due to the inability to observe the positioning of Truxor’s boom arm and therefore the pump.

336. In my opinion, no POSITA would find motivation to take these leaps to arrive at the ’708 Patent’s Challenged Claims. A POSITA would only arrive at the ’708 Patent’s Challenged Claims by using the Challenged Claims as blueprint.

337. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, 21, and 23 are nonobvious over the Truxor-Manure-Manager Combination.

**XVII. GROUND 7: CLAIMS 1-38 ARE NOT OBVIOUS OVER
SENWATEC AND YOON OR CARRIER IN VIEW OF
MANURE-MANAGER**

338. In the following sections, I examine various claim elements of the ’708 Patent and explain why at least independent claims 1, 17, 21, and 23 are not rendered obvious by SenwaTec in view of Yoon or Carrier and in further view of Manure-Manager (“the SenwaTec-Manure-

Manager Combination”). Claims 8-16 depend from claim 1, claims 18-20 depend from claim 17, claim 22 depends from claim 21, and claims 24-38 depend from claim 23, and are not rendered obvious by the SenwaTec-Manure-Manager Combination for at least the same reasons.

A. The SenwaTec-Manure-Manager Combination Fails to Disclose or Suggest Buoyant Elements Positioned Between the Front Wheel and Rear Wheel on Each Side of the Vehicle as Required by Independent Claims 17, 21, and 23

339. Independent claims 17, 21, and 23 of the ‘708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel.

340. Claim 17 of the ‘708 Patent requires “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.” Similarly, claim 21 specifies that “the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel.” And claim 23 recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel.”

341. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle” and independent claim 21 recites “a first buoyant element on a first *side* of the vehicle body and a second buoyant element on a second *side* of the vehicle body” (emphasis added).

342. In my opinion, these claim elements are not disclosed by the SenwaTec-Manure-Manager Combination.

343. Petitioner and Dr. Winkel incorrectly state that “SenwaTec discloses that the metal stabilizer pontoons are situated between the front and rear wheels on each side of the vehicle.” Petition, p. 65, [EX1004], Winkel Decl., ¶255. The image copied below from the SenwaTec

reference ([EX1012], SenwaTec. p. 1), which is found in the above identified sections of the Petition and the Winkel declaration, clearly depicts pontoons that are installed outboard of the wheels:



6-Wheel driven unit with stabilizer pontoons

[EX1012], SenwaTec, p. 1. There is simply no disclosure in SenwaTec that the stabilizer pontoons are situated between the front and rear wheels on each side of the vehicle as Petitioner and Dr. Winkel claim.

344. As a result, the SenwaTec-Manure-Manager Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17, 21, and 23 of the '708 Patent.

B. A POSITA Would Not Have Had a Motivation to Combine Truxor, Yoon or Carrier, and Manure-Manager

345. Petitioner and Dr. Winkel argue that a POSITA seeking to select an improved pump for use on the SenwaTec vehicle would replace SenwaTec's "dredging pump" with Nuhn's G-Force Vertical Pit Pump because Nuhn's dual outlet pump design was touted as having improved manure pumping capabilities. [EX1004], Winkel Decl., ¶¶342-343; *see also* Petition, p. 105. I

respectfully disagree with this conclusion.

346. SenwaTec's marketing brochure ([EX1012], SenwaTec) prominently advertises at the top of the first page its expertise in the following areas "Ditch Cleaner And Slope Mowers," "Moving and Clearing Boats," "Weed Harvesters," "Amphibious Vehicles," and "Cutter Suction And Excavating Dredges":



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

SCHRÖER ENVIRONMENT AND WATER TECHNOLOGY

Light Amphibious Boat/Vehicle

"Amphi-King®" SWT-AB380

- ❖ Light and strong aluminum construction, approximately 2480 kg (5,500 lbs.), without attachments
- ❖ 6-wheel drive or track drive system (track drives are patented system)
- ❖ Forward crane ready for many attachments with available power for up to 50 KW (67 HP)
- ❖ Heavy duty Diesel engine certified to the latest standards of Tier IV emission and fuel consumption
- ❖ Optimal configuration of power requirements and hydraulic unit (less operating costs)
- ❖ Low ground pressure and good clearance on terrain, marches and swamps during on-land drives
- ❖ Shallow vessel draft with, low center of gravity for safe on-water maneuvering
- ❖ High working range and wide swing radius of the hydraulic crane arm, ready for many attachments
- ❖ Operating controls conveniently placed and adjustable to suite operator's seat position
- ❖ Vehicle construction & safety configuration according to European & International standards



A compact muscular vehicle with tracks
With a powerful centrifugal pump and 8" suction- and 6" discharge ports, hydraulically driven, delivering 40 kW of pumping power



6-Wheel driven unit with stabilizer pontoons



- Ergonomic arrangement of the operating and monitoring elements



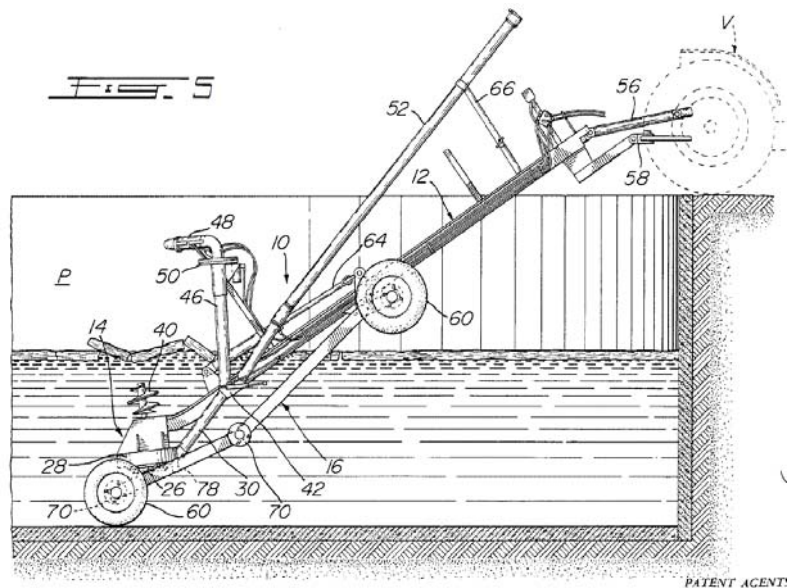
-A compact transport package on the tilt deck trailer

[EX1012], SenwaTec, p. 1 (red annotations added).

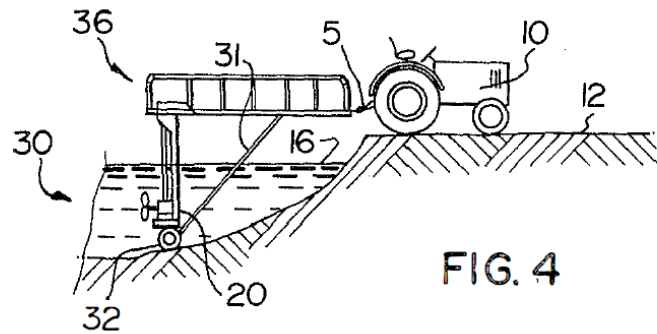
347. Petitioner and Dr. Winkel even concede that the centrifugal pump attachment disclosed in SenwaTec is a “dredging pump.” Petition, p. 104; see also, Winkel Decl. [EX1004],

¶342. A POSITA would not be motivated to replace SenwaTec’s dredging pump with Nuhn’s manure lagoon pump because there is zero evidence that Nuhn’s manure lagoon pump would work in dredging applications. In other words, a POSITA would not be motivated to replace SenwaTec’s dredging pump with a pump that was unproven in dredging applications because a POSITA would expect that doing so would likely destroy the dredging functionality of the SenwaTec vehicle – which is the primary purpose the SenwaTec vehicle was designed and built to perform.

348. Pumps and pumping vehicles that are used for manure lagoon agitation are designed such that the pump intake is positioned below the surface crust on a manure lagoon, but well above the bottom of the lagoon. Stated differently, manure lagoon agitation pumps are designed to be placed and operated in the middle of the “water” column. This positioning of manure lagoon pumps is described throughout the art of record:



[EX2017], Depault-II, p. 17.



[EX2010], Houle, p. 2.



Figure 9. To prevent intake of floating debris, suspend an irrigation pump intake about 2 feet below the surface of a lagoon.

[EX1038], Pfost, MU Guide on Land Application Equipment for Livestock and Poultry Manure Management, p. 5.

349. There are two primary reasons why manure lagoon agitation pumps are designed to be placed and operated in the middle of the “water” column. The first reason is that by placing the pump inlet away from the surface crust and the bottom sediment, the pump is less likely to become clogged. The second reason for placing the pump inlet in the middle of the “water” column is because most manure lagoons have a liner to prevent manure seepage into groundwater. It is therefore undesirable to position a pump at the bottom of a manure lagoon because doing so could damage the liner – leading to an environmental hazard.

Agitation in a plastic-lined satellite storage is difficult with conventional agitation equipment, since chopper-agitators will tear a plastic storage liner when lowered down a bank into the pit. A recommended agitation method for satellite storages is to redirect the discharge from the pit's pump through a 1 ½-inch nozzle onto the surface of the storage. A permanent or semipermanent hydrant can be fabricated in a shop and mounted at one or both ends of a satellite storage. One such nozzle may be sufficient to agitate a small storage. Larger satellite storages may require two nozzles directed into the storage for proper agitation. When using nozzle agitation, high-pressure irrigation pumps should be throttled back to low speed to reduce the risk of injury or damage to exposed portions of the plastic liner.

[EX1037], NRAES Liquid Manure Application Systems Design Manual, p. 64 (highlighting added).

350. It is the jets/spray of liquid manure being discharged from a manure lagoon agitation pump / manure lagoon agitation vehicle and the circulation of manure within the lagoon that are designed to break-up the surface crust and bottom sediment in a manure lagoon. Manure lagoon agitation pumps, whether tractor-mounted or mounted in a manure lagoon agitation vehicle, are not designed to pull/suck up the bottom sediment in a manure lagoon.

351. This stands in sharp contrast to dredging pumps, which are designed to pull/suck up the bottom sediment in a body of water. This goes to the different purpose of dredging compared to manure lagoon agitation. Dredging is performed to increase the depth of a waterway by pulling/sucking up bottom sediment. The primary purpose of manure lagoon agitation is to break-up the surface crust and bottom sediment and mix the contents of the entire manure lagoon to generate as near a homogeneous mixture of liquid manure in the manure lagoon as possible.

352. A POSITA would appreciate these differences and with that understanding in mind would not think to replace the SenwaTec's dredging pump with a manure lagoon agitation pump that was not designed, advertised, or proven for dredging operations because the result of the combination would likely ruin the dredging capabilities of the SenwaTec vehicle. The references themselves do give a reason for the proposed substitution. The SenwaTec reference itself ([EX1012], SenwaTec) makes no reference to manure lagoons or manure lagoon agitation. If the

teachings of EX1029-1031 (Frog As a Role Model Article (German), Frog As a Role Model Article (English Translation), SenwaTec Video and Screenshots) are even to be considered, at best they suggest using the SenwaTec vehicle in a municipal wastewater pond – not a manure lagoon with a high straw content. And there is no teaching or suggestion in Manure-Manager that manure lagoon agitation pumps are suited for dredging use. Indeed, “dredging” is not among the applications Fisher Pumps lists in its Manure Manager advertisement:

The advertisement is divided into two main sections. The top section features a large red lagoon pump mounted on a trailer, being towed by a tractor. Three circular callouts highlight specific features: 'TRIPLE PORTED LOFTED HOUSING', 'RADIO REMOTE CONTROL' (showing a hand holding a remote), and 'HEAVY COMMERCIAL OUTRIGGERS'. Performance specifications are listed as '7000 gal / min @ 150 Hp' and '5500 gal / min @ 95 Hp'. A yellow starburst with the word 'NEW' is placed over the pump. The bottom section is titled 'FISHER PUMPS' and lists applications: 'IRRIGATION.....MANURE HANDLING.....FLOOD CONTROL.....AERATION'. It describes the pumps as 'low maintenance, submersible centrifugal' and lists design features: 'Double discharge design equalizes pressure & maximizes horsepower!', 'All bearings above water level...No oilers to fill daily!', 'Constructed of 1/4" & 3/8" steel with heavy walled tubing', 'On site test pit to insure performance prior to shipment!', and 'No Priming....Self Draining....No Seals'. Various pump models are shown with labels: 'Vertical Self Bell Drive Pump', 'Electric Drive Aeration Pump', 'Tractor PTO Trailer Pump', 'Vertical Self Direct Drive Pump', 'Electric Drive Floater Pump', and 'Portable Hydraulic Screen Pump'. A central yellow oval invites visitors to 'Visit us at World Dairy Expo Booths #EH-S07 & S08'. Contact information for Fisher Pumps is provided at the bottom, including address, phone, fax, and website. A red arrow points from the 'NEW' starburst to the 'FISHER PUMPS' section.

=NUHN=

TRIPLE PORTED LOFTED HOUSING

RADIO REMOTE CONTROL

HEAVY COMMERCIAL OUTRIGGERS

7000 gal / min @ 150 Hp
5500 gal / min @ 95 Hp

NEW

HEADER SERIES LAGOON PUMP

95 Hp tractor shown

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FISHER PUMPS

IRRIGATION.....MANURE HANDLING.....FLOOD CONTROL.....AERATION

Fisher Pumps is a low maintenance, submersible centrifugal with a variety of pump styles to meet your needs!

Some design features are:

Double discharge design equalizes pressure & maximizes horsepower!
All bearings above water level...No oilers to fill daily!
Constructed of 1/4" & 3/8" steel with heavy walled tubing
On site test pit to insure performance prior to shipment!
No Priming....Self Draining....No Seals

Visit us at World Dairy Expo
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Manufactured by:
Fisher Pumps
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Greeley, CO. 80631
PH# 970-353-6962 Fax# 970-353-0839
Web Site : www.fisherpumps.com

Vertical Self Bell Drive Pump

Vertical Self Direct Drive Pump

Electric Drive Aeration Pump

Electric Drive Floater Pump

Tractor PTO Trailer Pump

Portable Hydraulic Screen Pump

Manure Manager • July/August 2011 23

[EX1020], Manure-Manager-II, p. 23 (red arrow and box annotations added).

353. For these reasons, it is my opinion that a POSITA would not attempt to make the alleged combination where SenwaTec's dredging pump is deleted and replaced with the Nuhn G-Force Vertical Pit Pump advertised in the Manure-Manager reference.

C. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining SenwaTec, Yoon or Carrier, and Manure-Manager

354. It is also my opinion that a POSITA would not foresee a reasonable expectation of success in making the alleged combination where SenwaTec's dredging pump is deleted and replaced with the Nuhn G-Force Vertical Pit Pump advertised in the Manure-Manager reference.

355. The dredging pumps disclosed in the SenwaTec reference are mounted at the end of an articulating excavator arm at the front of the SenwaTec vehicle. As a result of this mounting arrangement, SenwaTec's dredging pump is powered by hydraulics. In other words, the structure of SenwaTec's dredging pump is particularly configured so that it may be connected to hydraulic lines and driven by a flow of hydraulic fluid passing through the hydraulic lines.

356. By contrast, the dual outlet pump in Nuhn's G-Force Vertical Pit Pump is powered by a driveshaft that is mechanically coupled to the power-take-off (PTO) of a tractor:



[EX1019], Manure-Manager, p. 27.

357. The SenwaTec vehicle lacks a PTO to provide power to its attachments. As a result, a POSITA would not have had a reasonable expectation of success that Nuhn's G-Force Vertical Pit Pump, which includes a mechanical coupling, driveshaft, and mechanical gearbox, could be connected to and effectively driven by SenwaTec's hydraulics.

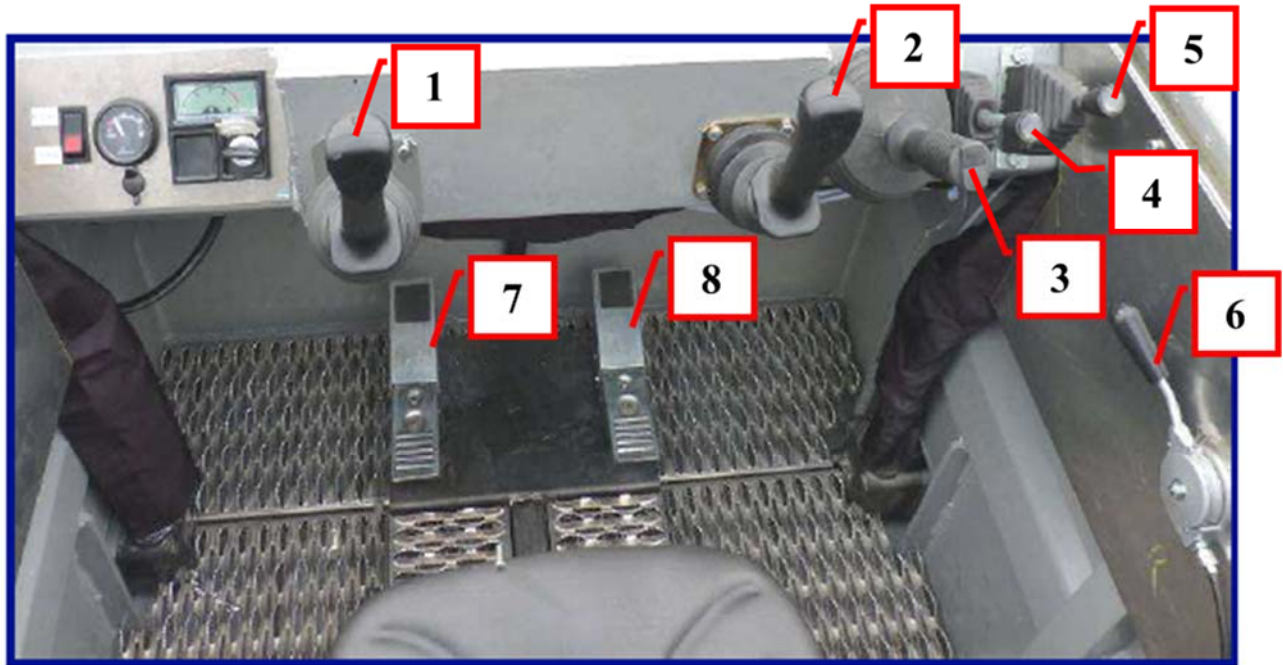
358. Furthermore, the amphibious vehicle disclosed in SenwaTec and its tool attachments are designed to be operated by an on-board operator. As a result, SenwaTec fails to teach the limitations of the Challenged Claims 1, 17, and 23 that recite "a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the power source; (2) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (3) control at least one of the speed and direction of the vehicle when the vehicle

is floating in the liquid manure lagoon.” SenwaTec also fails to teach the limitations of the Challenged Claim 21 that recite “a wireless remote control configured to enable an operator remote from the vehicle to: (1) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; (2) control at least one of the speed and direction of the vehicle when the vehicle is floating in the liquid manure lagoon; and, (3) control a flow of liquid manure from the liquid manure pump.”

359. With respect to Ground 3, Petitioner’s expert 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; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

360. Petitioner’s expert has not shown whether SenwaTec’s manual controls lend themselves to remote control, how remote control over the various functions could be implemented, or that the resulting combination would actually work in the manure lagoon environment.

361. In my opinion, SenwaTec’s manual controls depend on an onboard operator and close proximity observation of the submersed pump. As shown in the photograph below, the vehicle disclosed in SenwaTec has at least 8 different control interfaces – 5 separate joysticks, 2 foot pedals, and 1 hand-lever:



[EX1012], SenwaTec, p. 1 (numerical annotations added).

362. The difficulties with converting hydraulic controls of this type to wireless remote control would be known to a POSITA. Teleoperation is a term often used when a machine or robot is operated from a distance (aka remote control). The difficulties of operating an excavator-like machine system in a teleoperation type environment lie from delay (latency) in controls, lack of tactile feedback (which is provided through onboard hydraulic controls), and an overload of visual information. [EX2028], Practical Evaluation of a Control Concept, pp. 1, 4-6. The human machine interface (HMI) of hydraulic excavator controls has not evolved much in the last couple of decades and therefore does not lend itself to easily being converted to teleoperation. [EX2025], Excavator Human-Machine Interface Concepts, p. 3. In the 2013-2014 time period, commentators explained that further studies and development was needed to convert these types of manual excavator-like controls to wireless remote-control. [EX2025, Excavator Human-Machine Interface Concepts, p. 8. Further, ASME papers show this was still an area requiring further development and new control systems in 2022. [EX2028], Practical Evaluation of a Control Concept, pp. 1-2, 4-6.

363. Petitioner's expert has not shown or even attempted to explain how remote control

over the various functions could be implemented, how a POSITA could overcome these difficulties when making the SenwaTec combination, or that the resulting combination would actually work in the manure lagoon environment.

364. Even today, some ten years later, there is no evidence that a remote-control option has been added to the SenwaTec vehicle. On October 4, 2023, I visited the Berky website at <https://www.berky.de/en>. I understand from the Declaration of Ansgar Lonnemann ([EX1013], Lonnemann Decl.) that Berky purchased SenwaTec. In particular, the Berky Nereus 240 AMPHI appears to correspond to the SenwaTec amphibious vehicle depicted in EX1012. I was unable to find any reference to any features or options that indicated remote control of Berky's vehicles is available as an option for their products.

365. On October 4, 2023, I took screenshots from the Berky website and compiled them as EX2027. I therefore certify that the screenshots shown in EX2027 are true and correct images of the Berky website identified in the paragraph above. The fact that SenwaTec/Berky has not, to this day, added a remote control option to its vehicles provides evidence that this would not be a simple feat that could be accomplished by routine experimentation.

366. For these reasons, it is my opinion that a POSITA would not expect SenwaTec's controls to easily lend themselves to remote control.

367. 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.

368. Photographs in SenwaTec's marketing brochure [EX1012] 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 in these photographs:



[EX1012], SenwaTec, p. 2 (red annotations added). 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 from a remote location.

369. Petitioner's expert also fails to address another problem that a POSITA would expect if they attempted to add remote control functionality to SenwaTec – remote control increases the likelihood of a rollover.

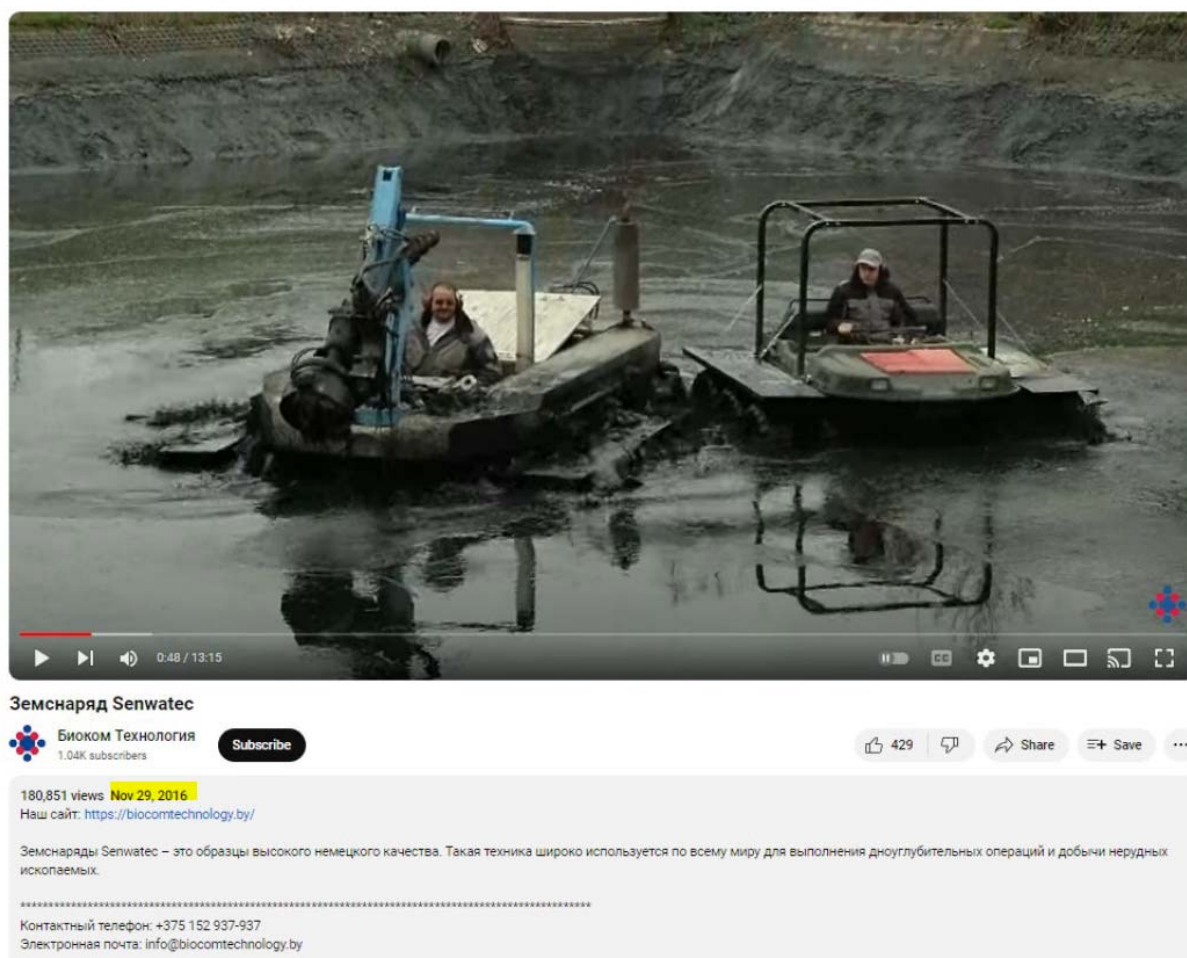
370. One of the video screenshots in Exhibit B to the Lonnemann Declaration illustrates that SenwaTec's vehicle has a rollover risk, much like the Truxor vehicle:



[EX1013], Lonnemann Decl., p. 14. On January 15, 2024, I personally accessed and viewed this video showcasing the SenwaTec vehicle, which is posted on YouTube at the following link:

<https://www.youtube.com/watch?v=ecnlfMf7CH4&t=1s>

On January 15, 2024, I took a screenshot of this YouTube video of the SenwaTec vehicle and included it in EX2032. I therefore certify that the screenshot shown in EX2032 and reproduced below is a screenshot from YouTube of the video whose URL link is identified above.



[EX2032], SenwaTec YouTube Video Screenshots, p. 1. The YouTube website indicates that this video was posted on November 29, 2016.

371. Manure lagoons typically have steep embankments that can be covered in manure, mud, sand, and/or ice and are therefore extremely slippery. In my opinion, a POSITA would expect the instability issues with the SenwaTec vehicle to 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 might not get hurt if a remote control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. This

tilting risk would dissuade a POSITA from adding remote control functionality to SenwaTec.

372. As a result, a POSITA would not have had a reasonable expectation that adding remote control functionality to SenwaTec would be successful in achieving the claimed invention - an amphibious remote-controlled manure agitation vehicle that has to traverse steep and slippery embankments while entering and exiting manure lagoons.

D. Petitioner's Combination of SenwaTec with Carrier or Yoon and Manure-Manager to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

373. As conveyed above, combining SenwaTec with Carrier or Yoon and further with Manure Manager to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to SenwaTec – when the failure to do so for any specific one would destroy the combination.

- First, a POSITA would need to find motivation to replace SenwaTec's *dredging* pump with the *manure* pump advertised in Manure-Manager – even though (a) there is no teaching or suggestion of manure pumping applications in SenwaTec's literature, (b) Nuhn's pump was unproven in dredging and likely to destroy SenwaTec's dredging functionality, which is its primary purpose, and (c) SenwaTec lacks the PTO necessary to drive Nuhn's G-Force Vertical Pit Pump and there is no evidence that Nuhn's pump could be easily converted to hydraulic drive.
- Second, a POSITA would need to find motivation to relocate SenwaTec's stabilizer pontoons – which are *outboard* of the SenwaTec's wheels – to be positioned between the front and rear wheel on each side the vehicle, which is nonsensical given that the stabilizer pontoons would have to be dramatically shortened to allow the stabilizer pontoons to be positioned between the wheels

on each side of the vehicle. And a POSITA would need to do all of this even though stabilizer pontoons in SenwaTec are already positioned at their most logical location.

- Third, a POSITA would need to find motivation to add wireless remote control to SenwaTec, even though it would be extremely difficult to convert SenwaTec's myriad of joysticks and foot controls to wireless remote control – only to end up with a pumping vehicle that is difficult if not impossible to control / operate from a remote location due to the inability to observe the positioning of Truxor's boom arm and therefore the pump.

374. In my opinion, no POSITA would find motivation to take these leaps to arrive at the '708 Patent's Challenged Claims. A POSITA would only arrive at the '708 Patent's Challenged Claims by using the Challenged Claims as blueprint.

375. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, 21, and 23 are nonobvious over the SenwaTec-Manure-Manager Combination.

XVIII. GROUND 8: CLAIMS 1-38 ARE NOT OBVIOUS OVER PUCK AND BRYHAM (ALONE OR IN VIEW OF BENNETT-II) IN VIEW OF MANURE-MANAGER

376. In the following sections, I examine various claim elements of the '708 Patent and explain why at least independent claims 1, 17, 21, and 23 are not rendered obvious by Puck in view of Bryham (alone or in view of Bennett-II) in further view of Manure-Manager ("the Puck-Manure-Manager Combination"). Claims 8-16 depend from claim 1, claims 18-20 depend from claim 17, and claims 24-38 depend from claim 23, and are not rendered obvious by the Puck-Manure-Manager Combination for at least the same reasons.

A. The Puck-Manure-Manager Combination Fails to Disclose the Arrangement of Buoyant Elements Situated Between Front

**and Rear Wheels on Each Side of the Vehicle as Required by
Independent Claims 17, 21, and 23**

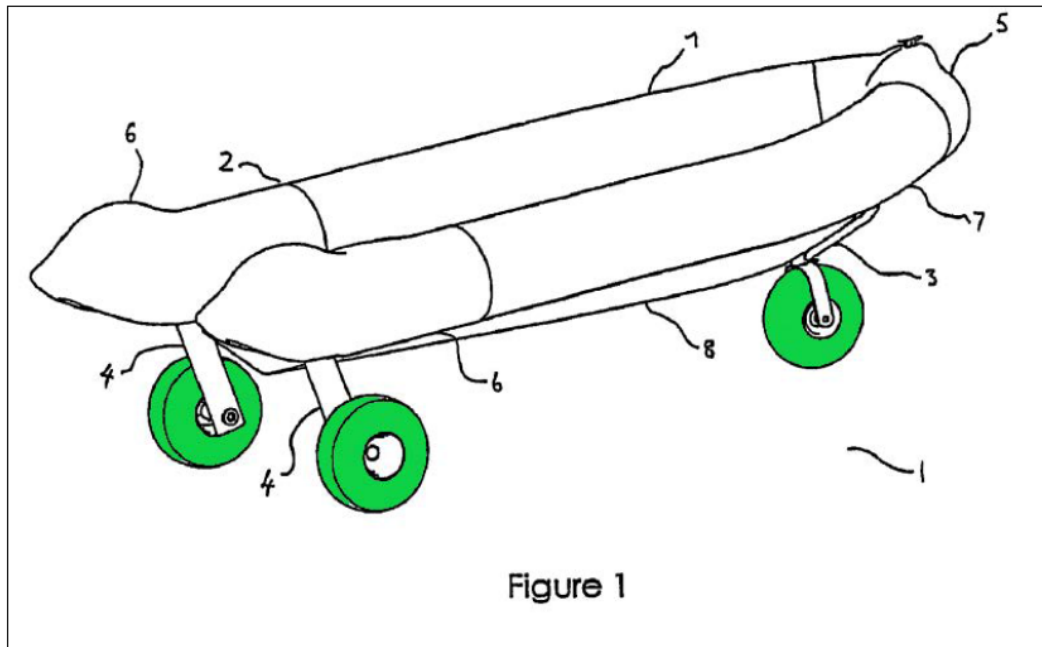
377. Independent claims 17, 21, and 23 of the '708 Patent all require a first buoyant element positioned between a first front wheel and a first rear wheel and a second buoyant element positioned between a second front wheel and a second rear wheel.

378. Claim 17 of the '708 Patent requires “a first buoyant element situated between the first front wheel and the first rear wheel and a second buoyant element between the second front wheel and the second rear wheel.” Similarly, claim 21 specifies that “the first buoyant element is between the first front wheel and the first rear wheel and the second buoyant element is between the second front wheel and the second rear wheel.” And claim 23 recites “a first buoyant element situated between [the]a first front wheel and [the]a first rear wheel and a second buoyant element between [the]a second front wheel and [the]a second rear wheel.”

379. Additionally, independent claim 17 explains that “the first front wheel and the first rear wheel are on a first *side* of the vehicle and the second front wheel and the second rear wheel are on a second *side* of the vehicle.” (Emphasis added).

380. In my opinion, these claim elements are not disclosed by the Puck-Manure-Manager Combination.

381. The vehicle disclosed in Puck is a manure agitation boat. Therefore, Puck’s vehicle lacks ground engaging propulsion structure such as front and rear wheels. As a result, Petitioner and Dr. Winkel assert that a POSITA would add Bryham’s wheels to the manure agitation boat disclosed in Puck. Petition, pp. 76; [EX1004]Winkel Decl., ¶1276. But what the Petitioner and Dr. Winkel suggest is not a simply plug-and-play substitution. As shown below, Bryham discloses a three-wheeled arrangement, where a single, steerable wheel is provided at the bow of the boat hull:



Petition, p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham); [EX1004], Winkel Decl., ¶293 (green annotations added by Dr. Winkel to FIG. 1 of Bryham).

So if a POSITA were even motivated to add Bryham's wheels to Puck, the resulting combination would only include 3-wheels, not four. Stated differently, if a POSITA simply added Bryham's wheels to Puck's vehicle, the resulting combination would not satisfy the language of claims 17 and 23 because the combination would not have both "a first front wheel" and "a second front wheel."

382. To reach the limitations of claims 17 and 23, Petitioner and Dr. Winkel impermissibly use the '708 Patent as a blueprint to arrive at an arrangement where Bryham's rear wheels are added at both rear corners of Puck's boat and at both front corners of Puck's boat:

301. As shown below, Puck includes three buoyant elements comprised of dock sections located along the length of the rectangular vehicle body. *Supra* Section X.G. A POSA would have found it obvious to use four wheels, with one wheel at each corner, to best support the rectangular vehicle body of Puck and to provide stability when the vehicle is land-engaging and when floating by evenly distributing the weight. *Supra* Section X.D.

Winkel Decl. [EX1004], ¶301 (highlighting added); *see also* Petition, p. 85.

383. So in other words, Petitioner and Dr. Winkel take the tenuous position that a POSITA would discard the single, steerable wheel in Bryham and would instead place two front wheels on Puck's hull by duplicating the two rear wheels disclosed in Bryham:

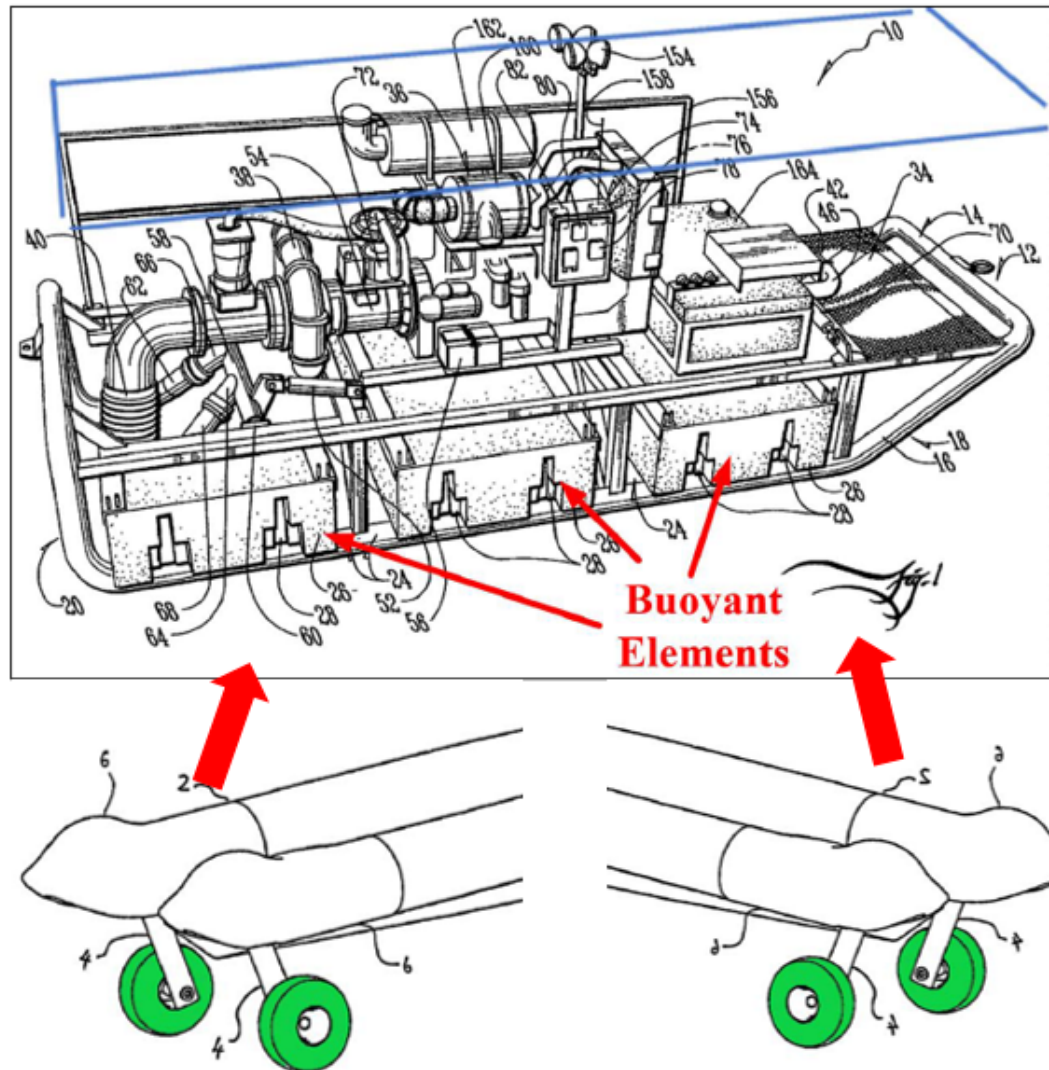


Figure 1

Petition p. 85 (annotations to Puck's FIG. 1 added by Petitioner); Petition p. 81 (green annotations added by Petitioner to FIG. 1 of Bryham; red arrows added herein to FIG. 1 of Bryham); *see also*

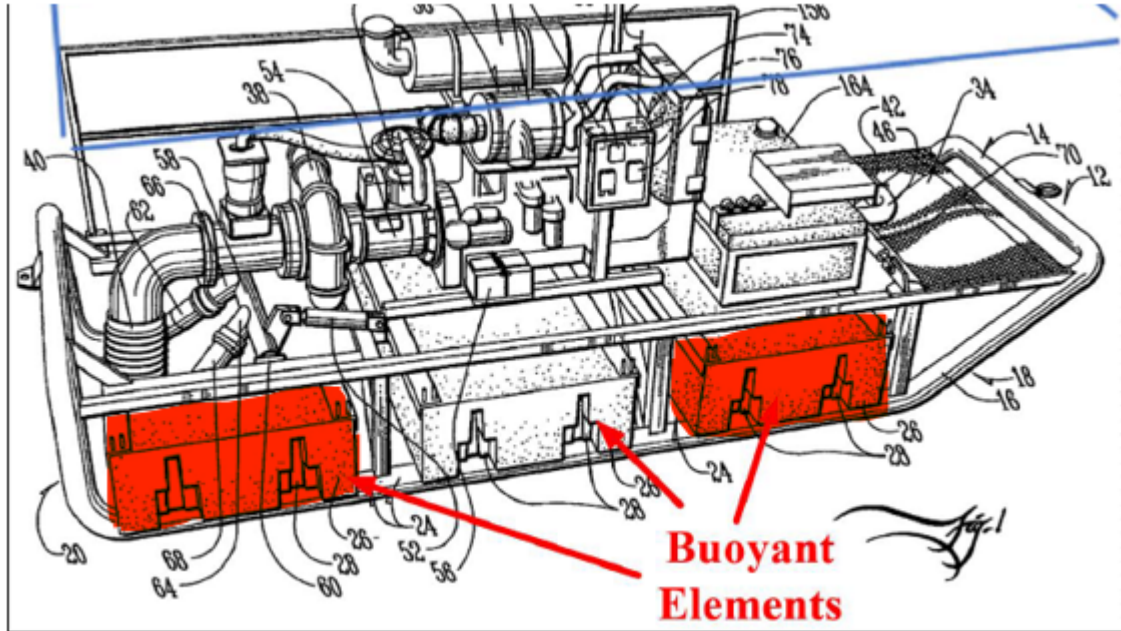
[EX1004], Winkel Decl., ¶¶293, 301.

384. To complete the mental gymnastics, Petitioner and Dr. Winkel then make yet another unsupported leap that in addition to converting Bryham's 3-wheel configuration to a 4-wheel configuration, a POSITA would then position the wheels on Puck's vehicle such that at least one floating dock section 26 would be situated between the front and rear wheels on each side of the vehicle:

302. Locating the wheels at each corner would result in at least one dock section (buoyant element) being located between the front and rear wheel on each side of the vehicle.

[EX1004], Winkel Decl., ¶302 (highlighting added); *see also* Petition, p. 86. I disagree with this conclusion that a POSITA would have arrived at the claimed arrangement of buoyant elements and wheels when combining Puck, Bryham, and Bennett-II and/or that a POSITA would have found the claimed arrangement to be obvious. The Puck, Bryham, Bennett-II, and Manure-Manager references themselves do not teach or suggest the alternative arrangement Petitioner proposes, where Bryham's single, front wheel is discarded and replaced by a duplicate set of Bryham's rear wheels at the front of the vehicle.

385. Moreover, adding Bryham's wheels to Puck in the manner suggested by Petitioner and Dr. Winkel would require the deletion of the floating dock sections at the corners of the vehicle disclosed in Puck (as shown in red below) so as to create room for Bryham's retractable wheel assemblies:



Petition, p. 85 (textual annotations added by Petitioner to FIG. 1 of Puck; red lighting to Puck's buoyant elements added herein).

A POSITA would recognize that eliminating the floating dock sections at the corners of the vehicle would cause stability problems when the vehicle is floating. In particular, eliminating the floating dock sections at the rear of the vehicle—as required to add Bryham's wheels—would create uneven buoyancy fore-and-aft, since the downwardly directed intake pipe 40 prevents a floating dock section to be centrally located in the rear of the vehicle. In my opinion, this would discourage a POSITA from locating Bryham's wheels at each corner of Puck's frame with at least one dock section located the front and rear wheels on each side of the vehicle.

386. In my opinion, the modifications that Petitioner and Dr. Winkel advocate to arrive at the claim limitations require much more than the routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint.

387. Bennett-II discloses a vehicle with tracks. Bennett-II also fails to disclose the placement of buoyant elements at the sides of the vehicle. Manure-Manager is only offered for

the purpose of disclosing manure lagoon agitation pumps and is therefore silent with respect to the claimed arrangement of buoyant elements and wheels. As a result, Bennett-II and Manure-Manager add nothing to the analysis of this claim element, nor does Petitioner suggest that they do.

388. As a result, the Puck-Manure-Manager Combination does not teach or suggest the positioning of the buoyant elements required by independent claims 17 and 23 of the '708 Patent.

B. The Puck-Manure-Manager Combination Fails to Disclose or Suggest “a Power Source Configured to Provide Power to Move the Vehicle Both When the Vehicle is Ground Engaging and When the Vehicle is Floating in a Liquid Manure Lagoon”

389. Independent claims 1, 17, and 23 all require “a power source configured to provide power to move the vehicle **both** when the vehicle is ground engaging and when the vehicle is floating in a/the liquid manure lagoon” (emphasis added). But neither Puck, Bryham, Bennett-II, nor Manure-Manager discloses a power source that powers the vehicle both on land and while floating.

390. Petitioner’s expert argues that a POSITA would be motivated to use Puck’s power source to also power the wheels being added by Bryham:

286. Bryham discloses a power source and a hydraulic drivetrain. “The hydraulic energy can be supplied from a pump 102 powered by an internal combustion engine 85.... The hydraulic energy is used to drive a[] hydraulic motor 108 ... which can ... drive the ground engagement means....” *Id.*, 16:1-6. Puck discloses a power source in the form of a “two-thousand horsepower” diesel engine and “[a] slurry pump [that] is coupled to the power source.” EX1014, ¶¶[0011], [0024]. “[T]he slurry pump ... expel[s] slurry ... from the slurry outputs” to move the agitator. *Id.*, ¶[0037]. Rather than loading the vehicle with multiple engines, a POSA would have been motivated to use this high-powered internal combustion engine to power the ground engagement means of Bryham and the fluid pump of Puck. The high-powered engine of Puck would easily power each of these components, and doing so would have been cheaper, lighter, and more efficient than providing separate engines for each component.

[EX1004], Winkel Decl., ¶286 (highlighting added). But Petitioner’s expert does not actually show or explain why the claimed arrangement “would be cheaper, lighter, and more efficient.”

391. In my opinion, a POSITA would not find the claimed arrangement, where the power source powers both a manure pump and a hydraulic pump that powers the hydraulic motors of the ground engaging propulsion structure to be obviously “cheaper, lighter, and more efficient” than the other potential options disclosed in Bryham. For example, one of the preferred embodiments disclosed in Bryham utilizes separate electric motors to power Bryham’s wheels. [EX1015], Bryham, col. 16, ln. 13-27. Petitioner’s expert appears to be relying on hindsight bias rather than the teachings in the prior art references themselves to conclude that the claimed arrangement is obviously the best.

C. The Puck-Manure-Manager Combination Fails to Disclose “Wireless Remote Control Configured to ... Control at Least

**One of the Speed and Direction of the Vehicle When the
Vehicle is Ground Engaging”**

392. 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. See [EX1014], Puck, ¶¶[0032]-[0033]. Puck also lacks any sort of ground engaging propulsion structure. As a result, Puck’s remote-control system does not provide “wireless remote control configured to enable an operator who is remote from the vehicle to ... control at least one of the speed and direction of the vehicle when the vehicle is ground engaging” as required by the language of the Challenged Claims.

393. The wireless-remote control system disclosed in Manure-Manager only controls the operation of the liquid manure pump and the orientation of its nozzle and is therefore similarly deficient.

394. Petitioner’s expert argues that a POSITA would have been motivated to configure the remote-control steering system of Bennett-II to control the speed and direction of the ground engagement means of Bryham while the vehicle is ground engaging. EX1004, Winkel Decl., ¶315. But this argument fails to address whether a POSITA would have a reasonable expectation that Bennett’s remote-control system could be used for control over Bryham’s steering and propulsion system (i.e., Bryham’s wheels).

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

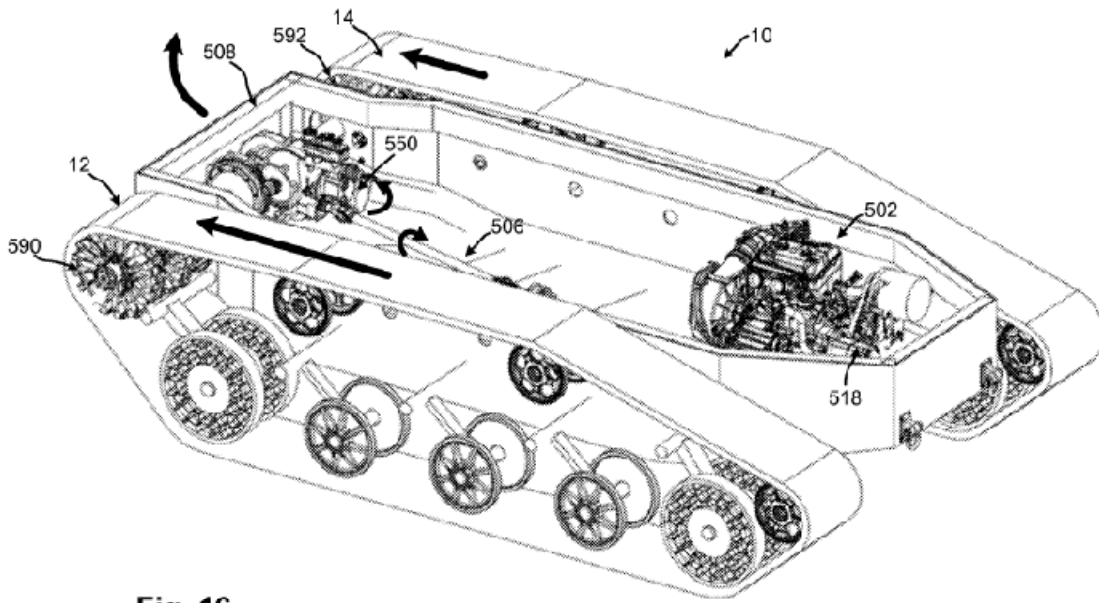


Fig. 16

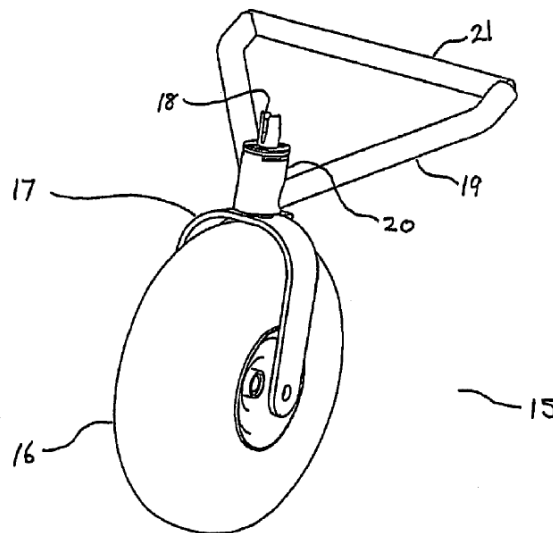
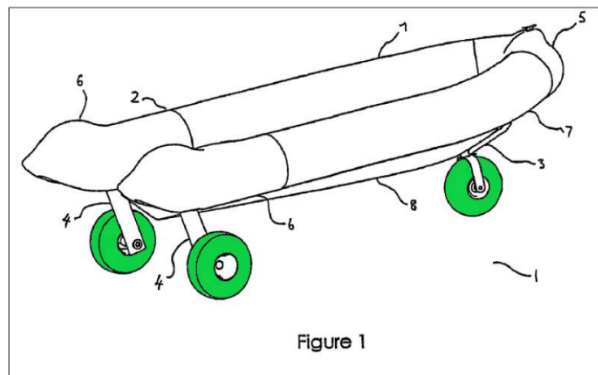
EX1017, Bennett, p. 22, FIG. 16.

396. The fact that paragraph [0043] of Bennett-II ([EX1017]) 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 substantially different from Bennett-II’s drivetrain.

D. The Puck-Manure-Manager Combination Fails to Disclose a Vehicle Including “Four Variable Speed Hydraulic Motors, One Variable Speed Hydraulic Motor Per Wheel, For

Independently Diving the Wheels at Variable Speeds” as Required by Independent Claim 17

397. Independent claim 17 requires an amphibious vehicle with four wheels and “four variable speed hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds.” 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. EX1004, Winkel Decl., ¶¶293-297. But Bryham teaches a three-wheel arrangement and the front wheel in Bryham (i.e., the one at the bow that swivels) is not powered at all and therefore is not powered by its own variable speed hydraulic motor:



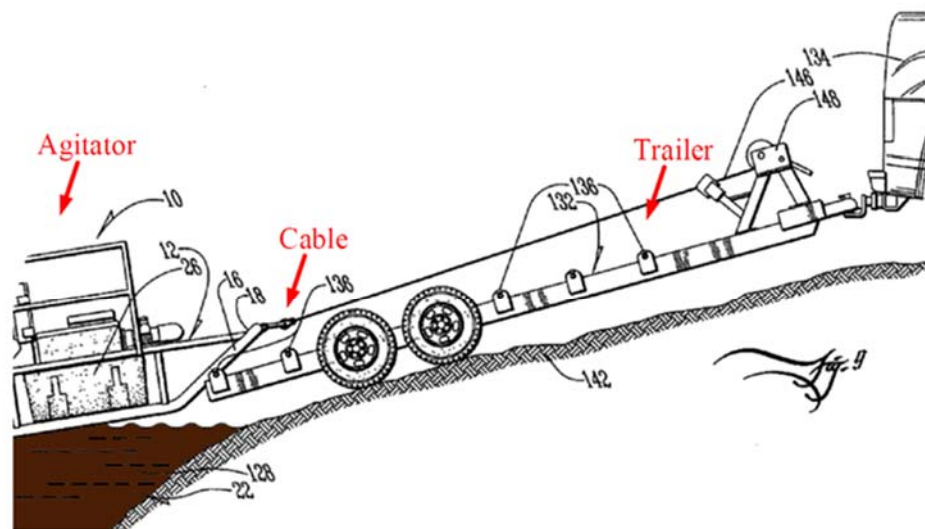
[EX1004], Winkel Decl., ¶293; (green annotations added to FIG. 1 of Bryham by Dr. Winkel);
[EX1015], Bryham, p. 3, FIG. 3A.

398. As a result, Bryham does not teach a system where there is “four variable speed hydraulic motors, one variable speed hydraulic motor per wheel, for independently driving the wheels at variable speeds” as required by the language of independent claim 17.

E. A POSITA Would Not Have Possessed a Motivation to Combine Puck, Bryham, Bennett-II, and Manure-Manager

399. Petitioner’s expert 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.” EX1004, Winkel Decl., ¶276. Neither of these reasons/flaws in Puck’s design is supported by Puck’s disclosure. Bennett-II and Manure-Manager do not correct these problems or provide isany additional motivation to add Bryham’s wheels to Puck.

400. As shown in the annotated image below from Paragraph 334 of the Winkel Declaration, Puck discloses a system where the manure agitation boat can be launched and retrieved without backing the trailer into the manure lagoon:



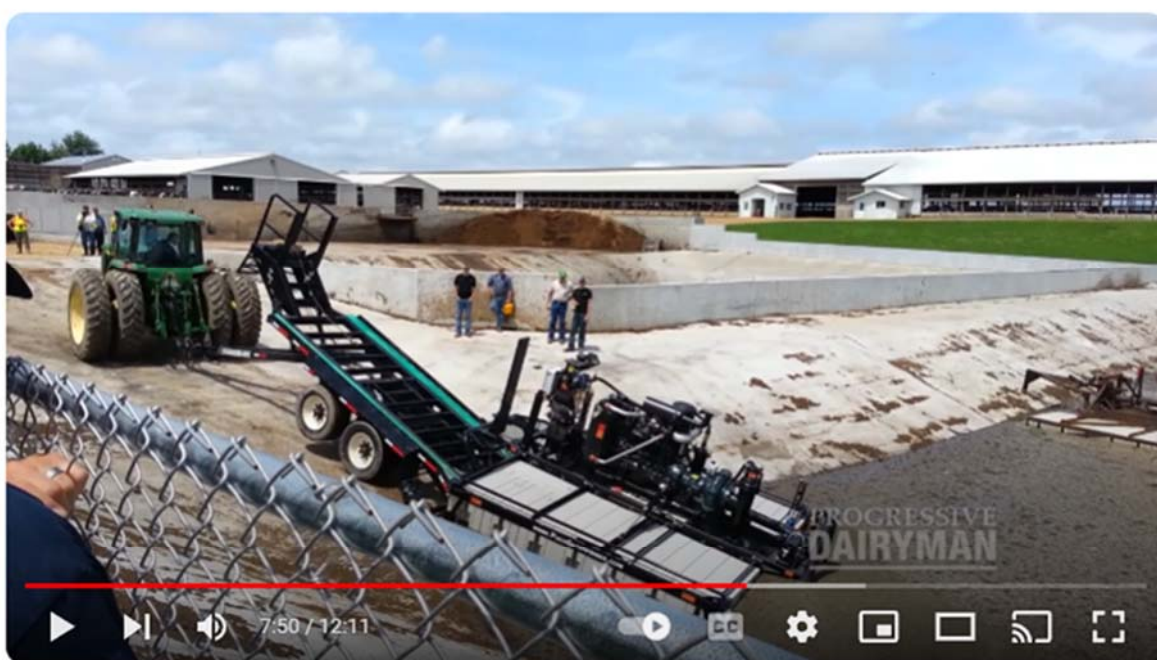
(Id., FIG. 9 (annotated).)

[]EX1004, Winkel Decl., ¶¶276-277 (red annotations added by Dr. Winkel to FIG. 9 of Puck).

401. A POSITA would recognize that the process of launching and retrieving Puck’s

boat does not require placing a trailer or one's feet into the hazardous and corrosive manure lagoon as Petitioner's expert incorrectly argues. See EX1004, ¶276. Indeed, nothing of the sort is shown or described in Puck's disclosure.

402. My opinion in this regard is further informed by the manure boat demonstration video published by Progressive Dairyman ([EX2008], Progressive Dairyman YouTube Video Screenshots), where neither the trailer nor the operator is shown entering the lagoon when Puck's boat is launched in the video:



[EX2008], Progressive Dairyman YouTube Video Screenshots p. 7.

403. 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. Bennett-II's disclosure of remote control does not change the fact that the "problems" Petitioner's expert points to in Puck did not actually exist.

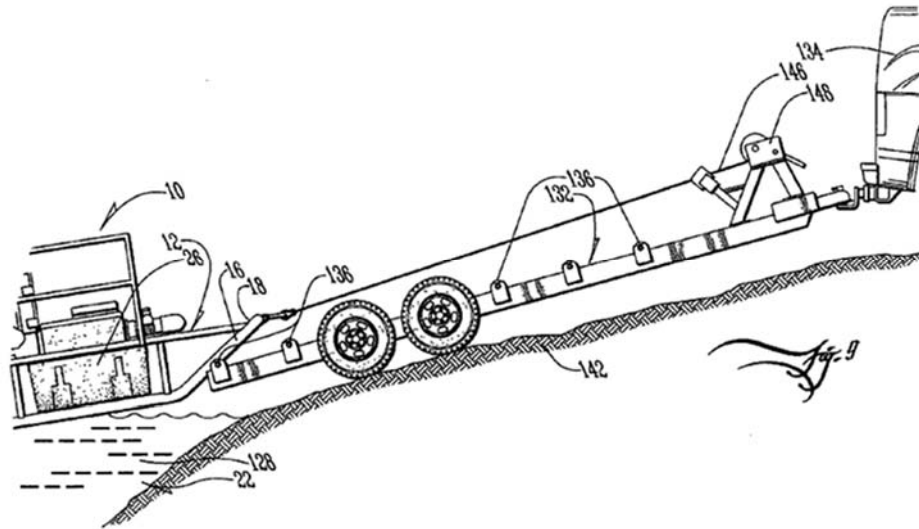
404. Furthermore, if a POSITA were concerned about "exposing a trailer (or vehicle) to

highly corrosive environments” as Petitioner’s expert argues (*see* [EX1004], Winkel Decl., ¶281), 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. Nor does Bennett-II or Manure-Manager suggest that corrosion would *not* be a problem if the Puck-Manure-Manager Combination were made.

405. As a result, it is my opinion that Petitioner’s combination where Bryham’s wheels are added to the vehicle described in Puck would not actually solve the alleged problem of equipment exposure to the corrosive manure lagoon environment. In fact, the opposite is true. A POSITA would expect corrosion problems to be worse if Bryham’s wheels and associated steering, support, and propulsion structure were added to Puck’s manure agitation boat.

F. A POSITA Would Not Have Had a Reasonable Expectation of Success in Combining Bryham With Puck

406. The manure agitation boat disclosed in Puck is designed to be launched and retrieved using a trailer:



[EX1014], Puck, p. 10, FIG. 9. As a result, Puck fails to teach the limitation of the Challenged Claim reciting a “ground engaging propulsion structure.”

407. In Ground 8, Petitioner’s expert asserts that a POSITA would **add** Bryham’s wheels to the manure agitation boat disclosed in Puck and controlling Bryham’s wheels using remote-control as generally discussed in Bennett-II; however, in my opinion a POSITA would not have had a reasonable expectation of success in making this combination and achieving the claimed invention.

408. 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:

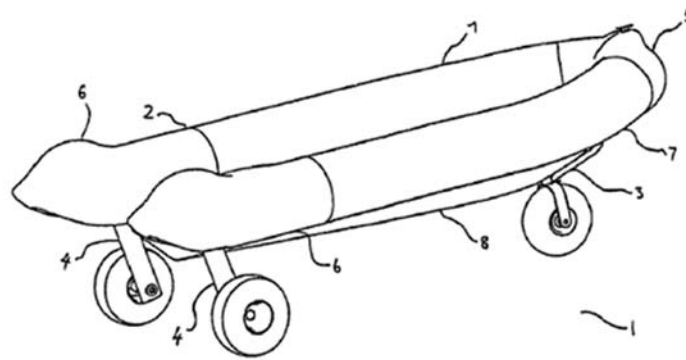


Figure 1

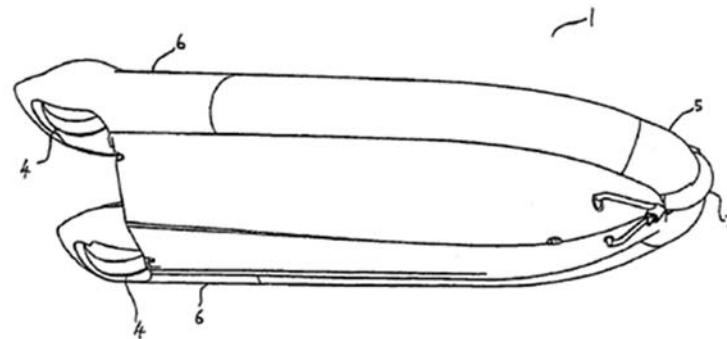


Figure 2

[EX1015], Bryham, p. 2, FIGS. 1 and 2.

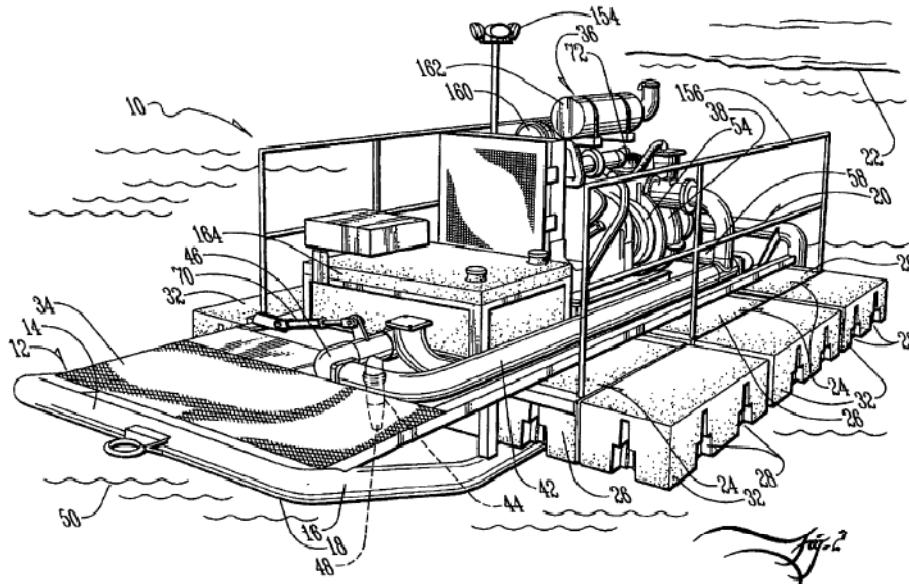
409. Unlike Bryham, Puck is more of a barge compared to a traditional boat and is constructed from modular floating dock sections 26 that are placed in a plurality of receiver slots 24 in a ladder-like frame 14:

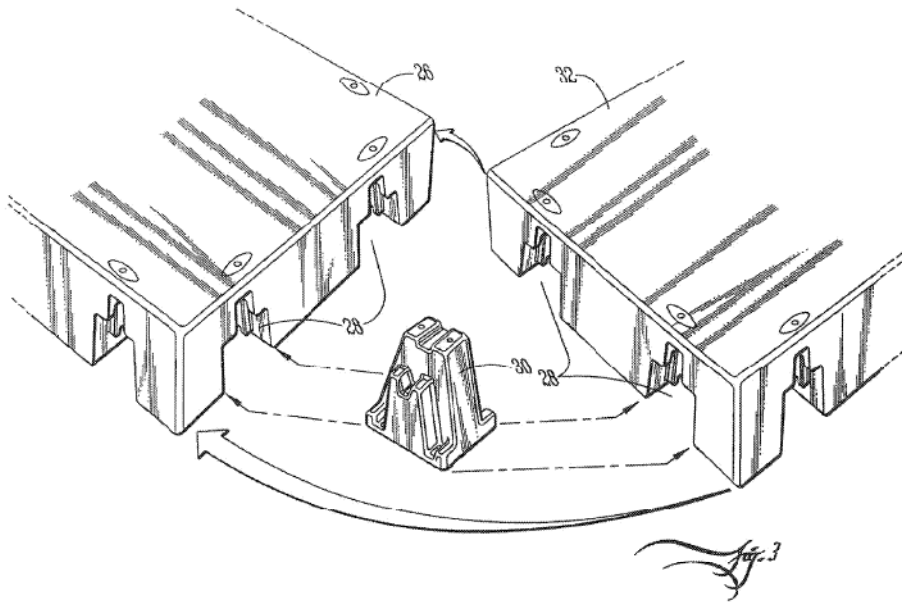
(10) from a manure lagoon (22). (FIGS. 1-2). The frame (14) defines a plurality of receiver slots (24) into which are provided modular dock sections (26), such as those known in the art. In the preferred embodiment, the dock sections (26) are 1000 series dock components manufactured by Connect-A-Dock, Inc. of Atlantic, Iowa.

[0023] The modular dock sections (26) are provided with connector slots (28) to fit into interlocking mating engagement with connector pins (30). The connector pins (30) allow the modular dock sections (26) to connect to additional dock sections (32) in a manner such as that known in the art. (FIGS. 1 and 3). The use of interlocking additional dock sections (32) allows for the buoyancy of the vessel (12) to be increased and allows the additional dock sections (32) to be removed to reduce the overall width of the agitator (10) for transport and storage. If desired, pontoons, inflatable components or any

[EX1014], Puck, ¶¶22-23 (highlighting added).

410. The modular dock sections 26 in Puck are held together with connector pins 30:





[EX1014], Puck, pp. 3-4, FIGS. 2 and 3.

411. In view of this disclosure, a POSITA would not reasonably expect that Bryham's wheels could be successfully added to Puck's vessel. A POSITA would understand that adding Bryham's wheels would interfere with the modular dock sections required in Puck for floatation as the two could not occupy the same space.

412. In my opinion, a POSITA would also understand that Puck's vessel is not designed so that its entire weight can be carried at 3 (one in the front and two in the rear) or 4 discrete points as it would be if Bryham's wheels were added.

413. Puck's vessel is designed so that its weight is evenly distributed when it is on shore and on the trailer. The connector pins that hold the modular dock sections together slide into slots in the modular dock sections from the bottom and the connector pins are wider at the bottom than they are at the top. A POSITA would understand that this design gives the connection between the modular dock sections good weight carrying ability when they are floating, but it is not designed to hold the modular dock sections together when they are suspended above the ground, as they would be if Bryham's wheels were added.

414. Finally, Petitioner's expert previously acknowledged that manure lagoons – the

environment in which Puck's vessel operates – often have steep and slippery embankments. *See Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2024-00004, EX1004, ¶336 (PTAB Oct. 13, 2023); *Bazooka Farmstar, LLC v. Nuhn Industries, Ltd.*, IPR2023-01161, EX1004, ¶334 (PTAB June 23, 2023). And Petitioner's expert acknowledges here a similar problem of “launching vessels in area lacking launching infrastructure.” [EX1004], ¶280. But Petitioner's expert does not explain why a POSITA would have expected the 3-wheel design disclosed in Bryham to provide Puck's vessel with the capability of traversing these steep and slippery embankments.

415. 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.

416. 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 might not get hurt if a remote-control vehicle tips, tipping creates a considerable set back as the remote control vehicle can become damaged by tipping and manned heavy equipment would likely be necessary to extract the vehicle from the manure lagoon and/or right the vehicle. This tilting risk would dissuade a POSITA from adding Bryham's wheels to the remote-controlled manure

agitation boat disclosed in Puck.

417. In my opinion, the modifications that Petitioner and Dr. Winkel advocate whereby the single, front wheel of Bryham would be discarded and replaced by a duplicate set of Bryham's rear wheels at the front corners of Puck's vehicle require much more than a routine substitution of elements and would not have been combined by a POSITA in this manner without using the '708 Patent as a blueprint. In my opinion, a POSITA would not have arrived at the claimed arrangement using the Puck, Bryham, Bennett-II, and Manure-Manager references as a starting point because none of those references teach or suggest the modifications Petitioner proposes (i.e., deleting Bryham's single, front wheel and placing a duplicate set of Bryham's rear wheels at the front corners of a vehicle).

418. The generalized statement in paragraph [0043] of Bennett-II that its "vehicle 10 may be operated by remote control" would not inform a POSITA that Puck's remote-control system could successfully be modified to control Bryham's 3-wheeled ground engagement system, let alone a modified version of Bryham's ground engagement system with two sets of Bryham's rear wheels, because Bryham's ground engagement system is substantially different from Bennett's drivetrain. Moreover, a POSITA would consider Bryham's ground engagement system to be even less stable and provide considerably worse traction and steering than the pair of tracks disclosed in Bennett-II. As a result, a POSITA would have greater reservations in adding remote control to Bryham's ground engagement system than adding remote control to Bennett-II.

G. Petitioner's Combination of Puck with Bryham (Alone or in View of Bennett-II) to Arrive at the Required Claim Limitations Is a Hindsight Combination That Requires Using The '708 Challenged Claims as Blueprint

419. As conveyed above, combining Puck with Bryham (alone or in view of Bennett-II) and further with Manure-Manager to arrive at the limitations of the Challenged Claims would require a POSITA to find multiple motivations to make a completely non-sensical series of modifications to Puck – when the failure to do so for any specific one would destroy

the combination.

- First, a POSITA would need to find motivation to replace Puck's slurry pump, which is centrally located on the vehicle high above the surface of the manure lagoon, with the liquid manure pump Nuhn advertised in Manure-Manager, which is designed to be mounted to the back of a farm tractor – even though there is no teaching or suggestion in the references themselves that Puck's slurry pump suffered drawbacks or needed replacing.
- Second, a POSITA would need to find motivation to discard Bryham's single front wheel, and add two sets of Bryham's rear wheels at the front and rear corners of Puck's boat– even though there is no teaching or suggestion of this.
- Third, a POSITA would need to find motivation to remove the front and rear buoyant elements on each side of Puck's boat to accommodate Bryham's wheels, in order to have the remaining middle buoyant element on each of the right and left sides of the boat positioned between the new front and rear wheels on each side of the boat. And a POSITA would have to do all of this with the knowledge that serious stability problems would likely ensue with no buoyant elements position at the rear of the vehicle.
- Fourth, a POSITA would need to find motivation to discard the electric wheel motors disclosed in Bryham and replace them with four variable speed hydraulic motors, one for each wheel, and then modify Puck's hydraulic system, which was only designed to move linear actuators, so that it could also be used to power hydraulic motors to drive the new wheels from Bryham.
- Fifth, a POSITA would need to find motivation to modify Puck's wireless remote control, which was only designed to control the engine and nozzles, so that it could also independently control the speed and/or direction of the new Bryham wheels – even though there is no teaching or suggestion of how Puck's

remote control system could be modified to control Bryham's wheels – and even though there is no teaching or suggestion of how Bennett-II's generically disclosed remote control system for its tracked vehicle could be modified to control Bryham's retractable wheels.

420. In my opinion, no POSITA would find motivation to take these leaps to arrive at the '708 Patent's Challenged Claims. A POSITA would only arrive at the '708 Patent's Challenged Claims by using the Challenged Claims as blueprint.

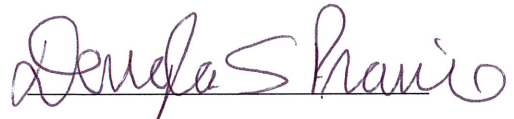
421. For all of the foregoing reasons, it is my opinion that independent claims 1, 17, 21, and 23 are nonobvious over the Puck-Manure-Manager Combination.

XIX. CONCLUSION

422. Based on my analysis, it is my opinion that the cited art does not anticipate or render obvious any of the Challenged Claims of the '708 Patent.

423. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: February 26, 2024


Douglas S. Prairie

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