

# **Bazooka-Farmstar, LLC v. Nuhn Industries Ltd.**

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

**PETITIONER'S DEMONSTRATIVES**

**PTAB ORAL ARGUMENT**

**February 13, 2025**



# Key Issues



- Claim construction:
  1. Does “liquid manure mover” require an “immersible” pump? No.
    - Therefore, Carrier and Puck meet this limitation.
    - Regardless, Truxor and SenwaTec teach an immersible pump.
  2. “Liquid manure pump” = “a pump with structure capable of pumping liquid with suspended solids.”
    - Carrier teaches this pump.

# Key Issues



3. It would be obvious to power Puck's pump with Bryham's hydraulic transmission.
4. Secondary considerations fail for the same reasons as in the '425 Patent IPR.

# Claim Construction



- "Liquid manure mover"
- "Liquid manure pump"



# “Liquid Manure Mover”

- Parties agree: (1) §112(f), and (2) structure includes a pump, conduit and nozzle. Paper 40 at 7.
- Nuhn incorrectly argues that the “pump” needs to be immersible.
  - “[I]ncorporation of structure from the written description **beyond that necessary to perform the claimed function**” is not permitted. *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).
- What is necessary: “pump, conduit, and nozzle.”



# “Liquid Manure Mover”

- Nuhn cherry picks “immersible” from the claimed features.
- Claim 1:

a hydraulically powered liquid manure mover separate from the ground engaging propulsion structure, the liquid manure mover positioned within liquid manure when the vehicle is floating;

# “Liquid Manure Mover”



- Nuhn cherry picks “immersible” from its list of optional features:

The fluid pump may comprise a pump housing configured for immersion within the fluid. The pump housing may

vehicle. The power source may be connected to the fluid pump hydraulically, electrically, or via a mechanical drive.

outlets. A greater number of tangential fluid outlets may be provided, for example three fluid outlets. The tangential

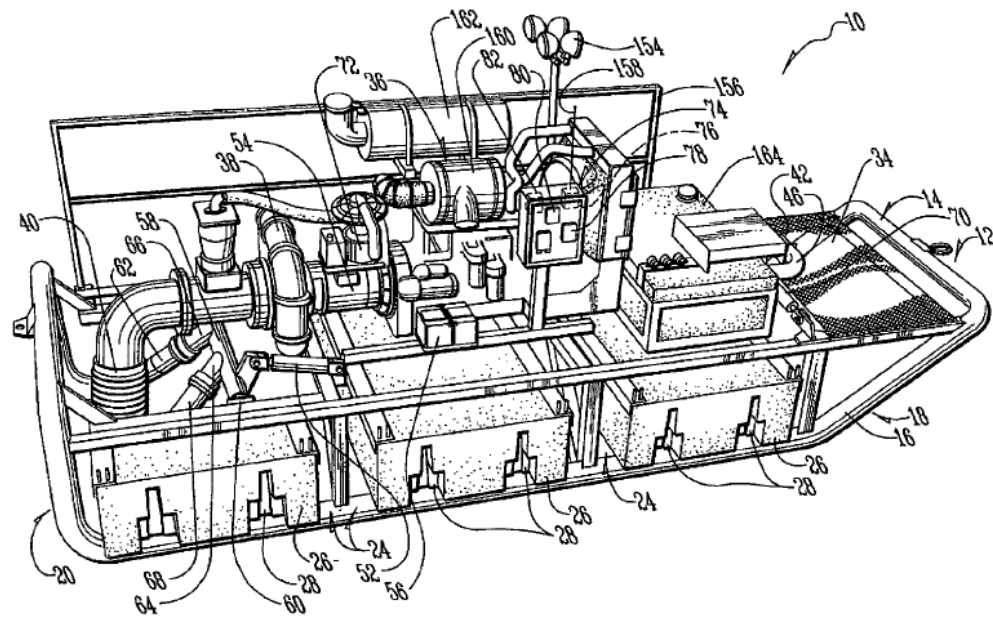
for immersion within the fluid. The pump housing may comprise a bottom fluid inlet and at least two tangential fluid outlets. A greater number of tangential fluid outlets may be

provided, for example three fluid outlets. The tangential 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

# "Liquid Manure Mover"



- An "immersible" pump is not necessary for pumping liquid manure:



Nuhn agrees: "Puck discloses a slurry pump 38 that is mounted high and dry in the vessel hull. Puck's pump 38 is not 'positioned within liquid manure when the vehicle is floating.'" Paper 23 at 61.

# "Liquid Manure Mover"



- An "immersible" pump is not necessary for pumping liquid manure.
- Only one of these ten pumps is described as "submersible."

Table 3.2 Liquid manure handling pumps

| Pump type                                                                  | Maximum solids content (%) | Agitation ability | Agitation range (ft) | Available pumping rate (gpm) | Available pumping head (ft of water) <sup>a</sup> | Power requirements (hp) | Applications                                                                                                              |
|----------------------------------------------------------------------------|----------------------------|-------------------|----------------------|------------------------------|---------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Centrifugal</b><br>Open & semi-open impeller:<br>Vertical shaft chopper | 10–12                      | excellent         | 50–75                | 1,000–3,000                  | 25–75                                             | 65+                     | gravity irrigation, tanker filling, pit agitation, transfer to storage                                                    |
| <b>Centrifugal</b><br>Inclined shaft chopper                               | 10–12                      | excellent         | 75–100               | 3,000–5,000                  | 30–35                                             | 60+                     | earthen storage agitation, gravity irrigation, tanker filling                                                             |
| <b>Centrifugal</b><br>Submersible transfer pump                            | 10–12                      | fair              | 25–50                | 200–1,000                    | 10–30                                             | 3–10                    | agitation, transfer to storage                                                                                            |
| <b>Centrifugal</b><br>Closed impeller                                      | 4–6+                       | fair              | 50–75                | 500+                         | 200+                                              | 50+                     | recirculation, sprinkler irrigation, transfer to distant storage <sup>b</sup>                                             |
| <b>Elevator</b>                                                            | 6–8                        | none              | 0                    | 500–1,000                    | 10–15                                             | 5+                      | transfer to storage                                                                                                       |
| <b>Helical screw</b>                                                       | 4–6                        | fair              | 30–40                | 200–300                      | 200+                                              | 40+                     | agitation, sprinkler irrigation, transfer to storage, holding pond and lagoon pumping, tanker filling, no foreign objects |
| <b>Piston</b><br>Hollow piston                                             | 16–18                      | none              | 0                    | 100–150                      | 30–40                                             | 5–10                    | transfer cattle manure without long fibrous bedding                                                                       |
| <b>Piston</b><br>Solid piston                                              | 16–18                      | none              | 0                    | 100–150                      | 30–40                                             | 5–10                    | transfer cattle manure with unchopped bedding                                                                             |
| <b>Air-driven</b><br>Self-loading vacuum tanker                            | 8–10                       | poor              | 20–25                | 200–300+                     | N/A                                               | 50+                     | tanker loading                                                                                                            |
| <b>Air-driven</b><br>Pneumatic                                             | 12–15                      | none              | 0                    | 100–150                      | 30–40                                             | —                       | transfer to storage                                                                                                       |

<sup>a</sup> To convert head in feet of water to pounds per square inch (psi), divide by 2.31.

<sup>b</sup> Chopper needed prior to pumping dairy manure.

(From: *Livestock Waste Facilities Handbook*, MWPS-18)

# "Liquid Manure Mover"



- Summary of the invention:

(57)

## ABSTRACT

An amphibious pumping vehicle has a floatable vehicle body, a ground engaging propulsion structure, a fluid pump, a plurality of fluid nozzles comprising a first fluid nozzle connected by a fluid conduit to the fluid pump and at least

## SUMMARY OF THE INVENTION

According to the invention, there is provided an amphibious pumping vehicle comprising: a floatable vehicle body; ground engaging propulsion structure configured to raise and lower relative to the vehicle body; a fluid pump; a first fluid nozzle configured to direct fluid through the air, the fluid nozzle connected by a fluid conduit to the fluid pump; and, a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump.



# “Liquid Manure Mover”

- The '835 Patent specification never uses the term “liquid manure pump” for pumping liquid manure.
- It discloses a “fluid pump.”



# “Liquid Manure Mover”

- Nuhn does not structurally differentiate a “fluid pump for pumping liquid manure” from “a liquid manure pump.”
- Nor does the ‘835 Patent.



# "Liquid Manure Pump"

- Nuhn's "liquid manure pump" is described in the '835 Patent as "a fluid pump."
- The Board previously construed "a fluid pump for pumping liquid manure" as "a pump with a structure that is capable of pumping liquid with suspended solids." IPR2023-01161, Paper 71 at 13.



# "Liquid Manure Pump"

- The '835 Patent provides no basis for construing a "liquid manure pump" differently from "a fluid pump for pumping liquid manure."
- The record shows that a wide variety of pumps were considered "liquid manure handling pumps." *See, e.g.*, EX1034, 52; EX1048, 76.



# "Liquid Manure Pump"

- Nuhn focuses its arguments on design intent.  
Paper 23 at 16.
  - "It is well settled that the recitation of a new intended use for an old product does not make a claim to that old product patentable." *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997).



# “Liquid Manure Pump”

- Nuhn’s Newtonian fluid arguments are wrong:
  - At less than 5% TS, liquid manure **is** a Newtonian fluid. EX1110, ¶¶108-113.
  - A high-volume water pump **can** pump a non-Newtonian fluid. Nuhn does not contest this. EX1110, ¶¶75-79, 108-113.

# "Liquid Manure Pump"

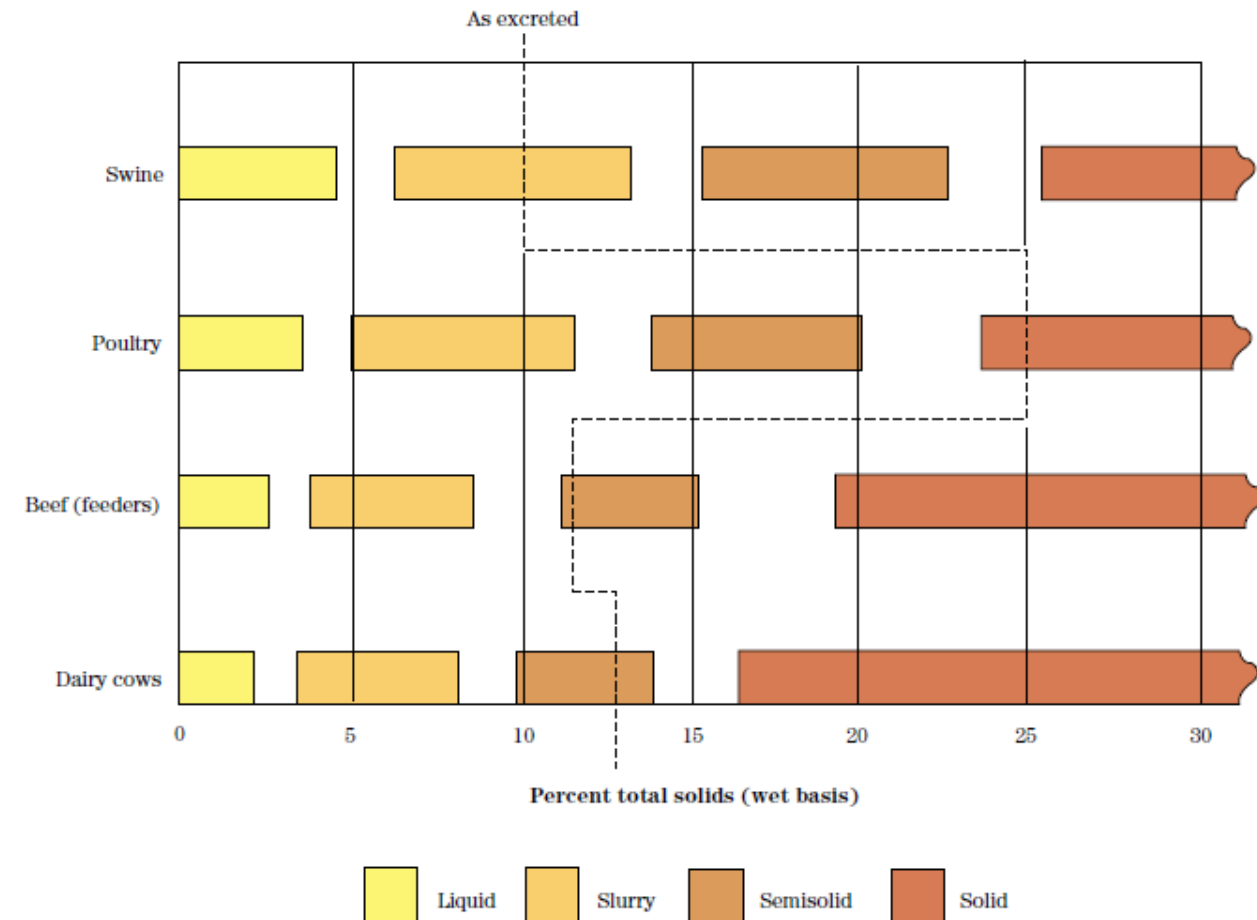


## Lagoon waste systems

### Characteristics

Lagoon systems handle highly diluted waste (96 percent or more water) that can be pumped through irrigation systems. Most lagoon effluent is more than 99 percent water, so it has the consistency of water. The anaerobic breakdown of manure in a lagoon usually results in acceptable odor levels when the effluent is applied by an irrigation system.

Figure 12-92 Relative handling characteristics of different kinds of manure and percent total solids



(210-VI-AWMFH, Amend. 44, July 2011)

12-77



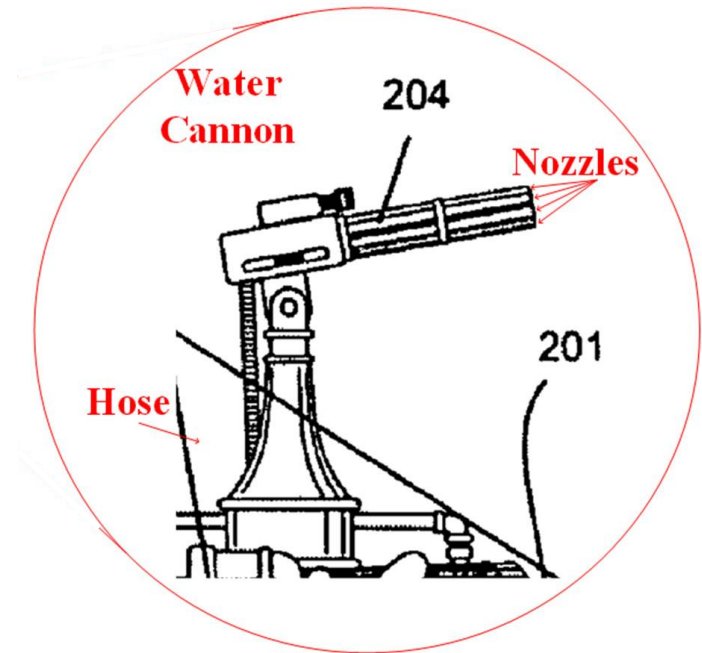
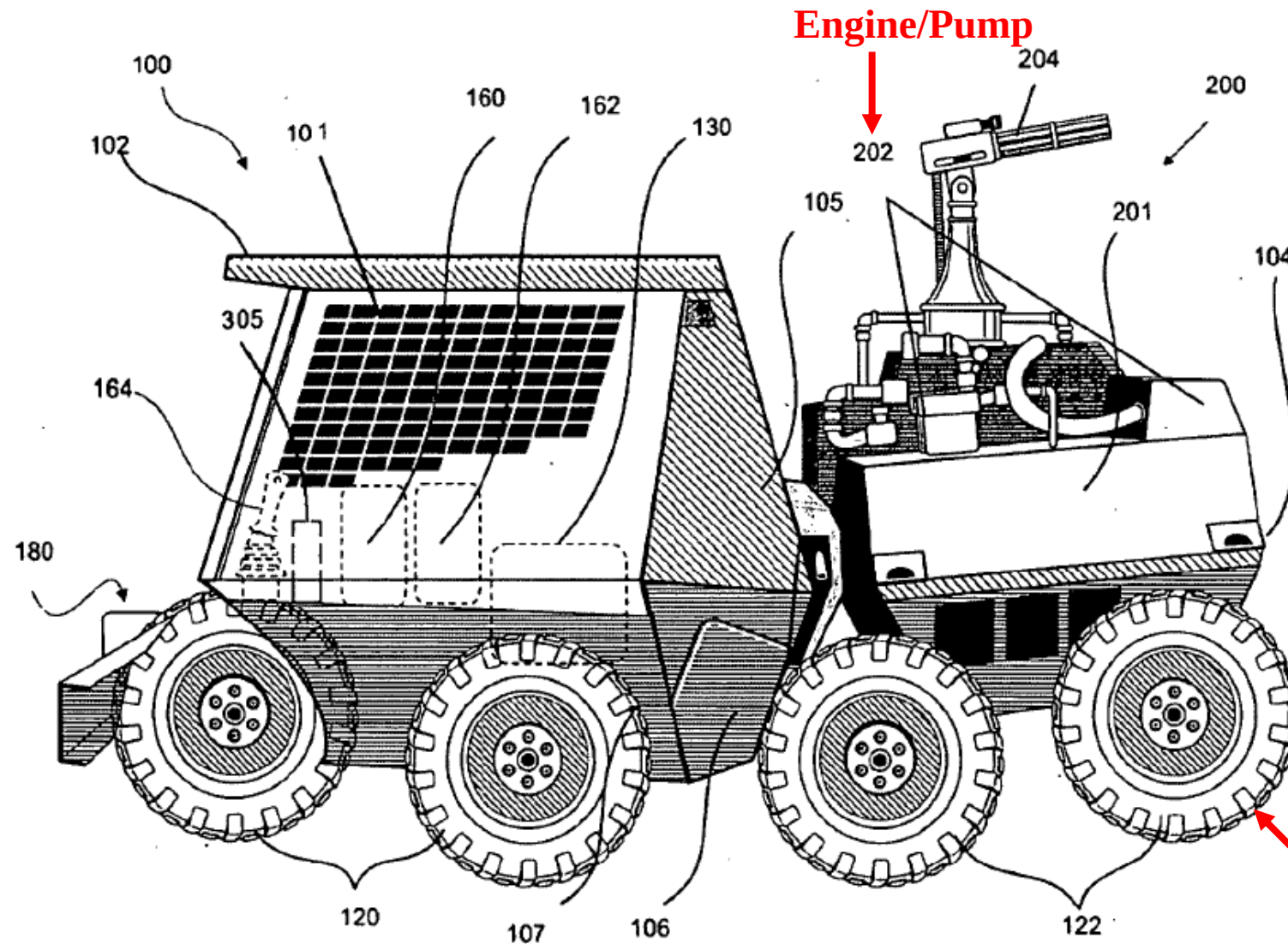
# "Liquid Manure Pump"

- Nuhn's belated corrosion arguments are wrong:
  - Nuhn fails to describe any structure necessary to address "corrosion."
  - POSAs understood that water pumps have long been used to pump liquid manure. EX1004, ¶¶68-69, 87, 104, 107; EX1110, ¶¶22, 53-54, 81; EX1119, ¶¶6-7; EX1120, ¶15.

# Ground 1: Carrier



Amphibious vehicle



Ground engaging propulsion structure

EX1005, FIG. 1

# Carrier Anticipates Claims 1-10, 13-26 and 29-40



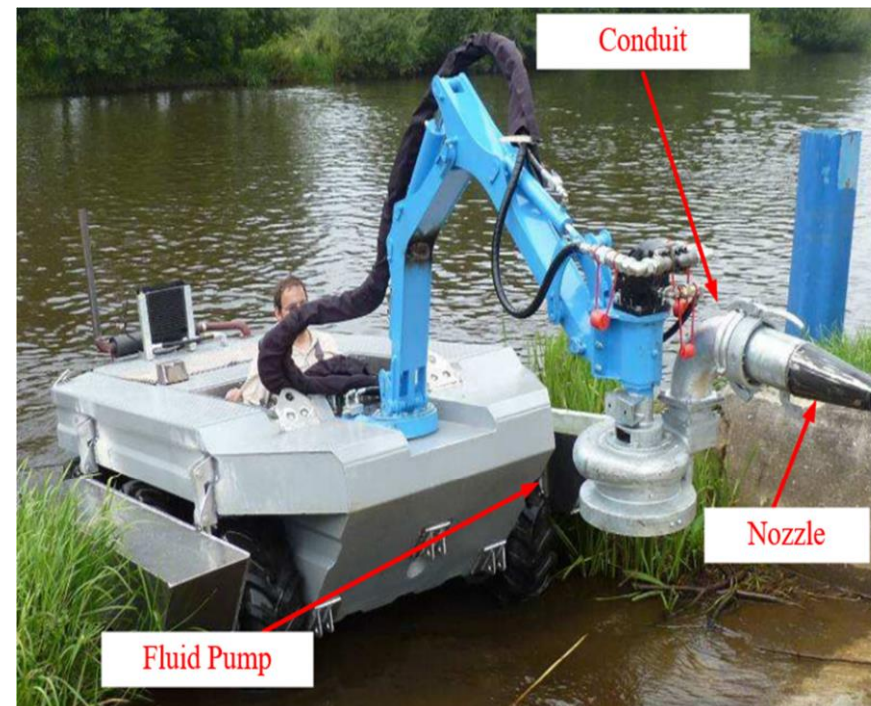
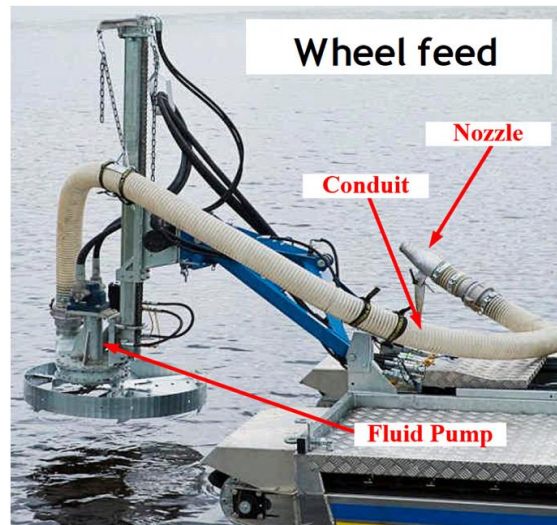
- Carrier teaches “a fluid pump capable of pumping liquid manure” (i.e., a liquid manure pump). IPR2023-01161, Paper 71 at 19.

# Carrier Anticipates Claims 1-10, 13-26 and 29-40



- Carrier discloses a conduit (part of the “liquid manure mover”) immersed in the liquid manure. EX1110, ¶¶87-91.
  - “Draft capable.” EX1005, ¶[0051].
- Nuhn’s argument that Carrier could not pump “while floating” makes no sense.
- Nuhn’s arguments regarding “recirculating liquid manure” are wrong.
  - This function is not recited in the claims.
  - “[T]he recitation of a new intended use for an old product does not make a claim to that old product patentable.” *In re Schreiber*, 128 F.3d at 1477.

# Grounds 2-3: Truxor / SenwaTec in view of Yoon or Carrier



EX1006 at 10;  
EX1009 at 20;  
EX1012 at 2

# Truxor / SenwaTec Obviate Claims 1-5, 7-21, and 23-40



- Even if the Board accepts Nuhn's argument that the "liquid manure mover" requires an "immersible liquid manure pump," the claims are obvious over Truxor and SenwaTec.

# SenwaTec Discloses an Immersible Liquid Manure Pump



- Nuhn baselessly argues that most centrifugal pumps do not pump liquid manure. Paper 23 at 53.
- Centrifugal pumps **do** pump liquid manure. EX1034, 52; EX1113, 23.
- Ian Nuhn confirmed that the '835 Patent discloses a centrifugal pump used for pumping liquid manure. EX1116, 260:24-261:18; EX1001, 7:42-46; EX1028.

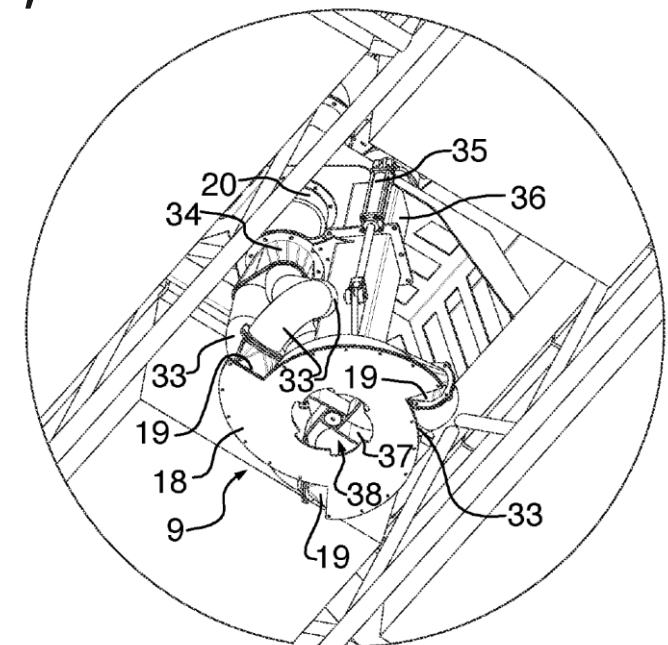


FIG. 8

EX1001, FIG. 8

# SenwaTec Discloses an Immersible Liquid Manure Pump



- Dredge pumps such as SenwaTec Pump were capable of pumping higher solid content forms of manure in addition to dilute liquid manure. EX1110, ¶146.
- EX1066-EX1069, EX1072-EX1075 show the Amphi-King's manure pumping capabilities.
- Nuhn's distinction between human manure and livestock manure is irrelevant. EX1073, ¶32; EX1120, ¶14; EX1110, ¶¶150-153.

# SenwaTec Discloses an Immersible Liquid Manure Pump



- “The sewage slurry I pumped often **contained human feces as well as debris**. For example, the sewage slurry often contained debris **such as condoms, tampons or toilet paper, which I pumped** from the lagoon together with the sewage slurry. This waste also included other natural waste such as **reeds, branches or leaves** from the areas around the lagoon, **which I pumped as well.**”
  - – Eckhard Funck (the operator of the vehicle in EX1066).



# SenwaTec Discloses an Immersible Liquid Manure Pump



- Mr. Puck used SenwaTec's "Super 150 Doda Pump" to pump liquid manure. The "Super 150 Doda Pump" was "**widely used in the industry**" to pump liquid manure" prior to 2013. EX1158, 62:23-64:16 (referencing EX1012 and EX1159); EX1131, 69:6-15 (referencing EX1012).



# Truxor Discloses an Immersible Liquid Manure Pump



- Dredge pumps such as the Doro Pump were capable of pumping higher solid content forms of manure in addition to dilute liquid manure.
- Dr. Winkel testified that Truxor discloses a pump for pumping liquid manure, i.e. the Doro Pump.
- Mr. Olofsson testified that the Doro Pump could pump up to 30% total solids.

EX1004, ¶¶156-157  
EX1110, ¶¶100-113  
EX1132, 104:18-105:7



## Truxor / SenwaTec Disclose a “Liquid Manure Mover Positioned Within Liquid Manure When the Vehicle is Floating”

- Truxor and SenwaTec both disclose pumps that are immersed within the fluid while pumping.
- The claims do not foreclose boom-mounted pumps.
  - “[A] prior art reference ... render[s] obvious an apparatus claim ... even if it does not meet the claim limitations in all modes of operation.” *ParkerVision Inc. v. Qualcomm Inc.*, 903 F.3d 1354, 1361 (Fed. Cir. 2018).



EX1006 at 10;  
EX1009 at 20;  
EX1012 at 2



# Truxor/SenwaTec and Yoon or Carrier Disclose the Remote-Control Limitations

- Melnikov explicitly taught adding remote control to Truxor-type amphibious vehicles. EX1024, 4.
- Mr. Olofsson testified that remote-control was added to Truxor before 2013. EX1132, 104:18-107:1.
- Remote control of the vehicle would allow the operator to better position themselves to observe the vehicle (and any tilting) than if they were seated thereon. EX1110, ¶¶128-129.
- Nuhn does not contest that the vehicles would be safer to operate with remote-control.

# Yoon and Carrier Disclose Claimed Remote Control



- Both disclose remote control wheels, i.e. speed. EX1005, ¶¶[0064]-[0065]; EX1011, ¶[0048].
- Both disclose remote control of the fluid pump. EX1005, ¶¶[0059], [0064]; EX1011, ¶[0048].
- Both disclose remote control of “one of” speed and direction on the ground. EX1005, ¶¶[0064]-[0065]; EX1011, ¶[0048].
- Both disclose remote control of “one of” speed and direction while floating. EX1005, ¶¶[0058], [0064]-[0065], [0079]; EX1011, ¶[0048].



# Ground 4: Puck in View of Bryham

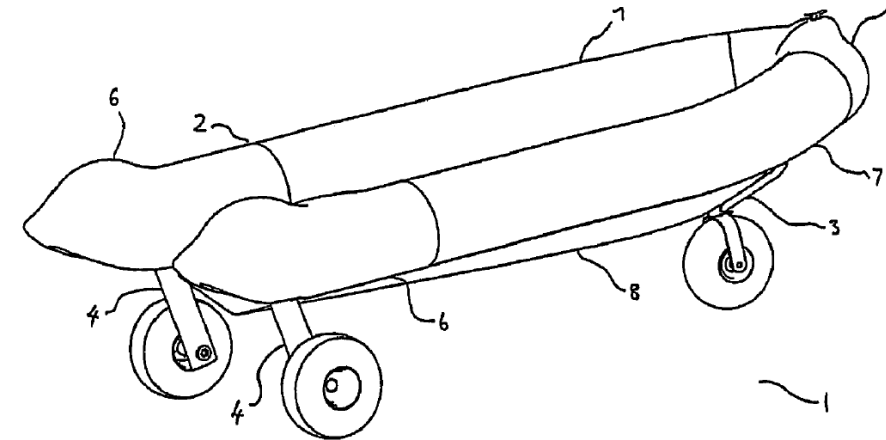
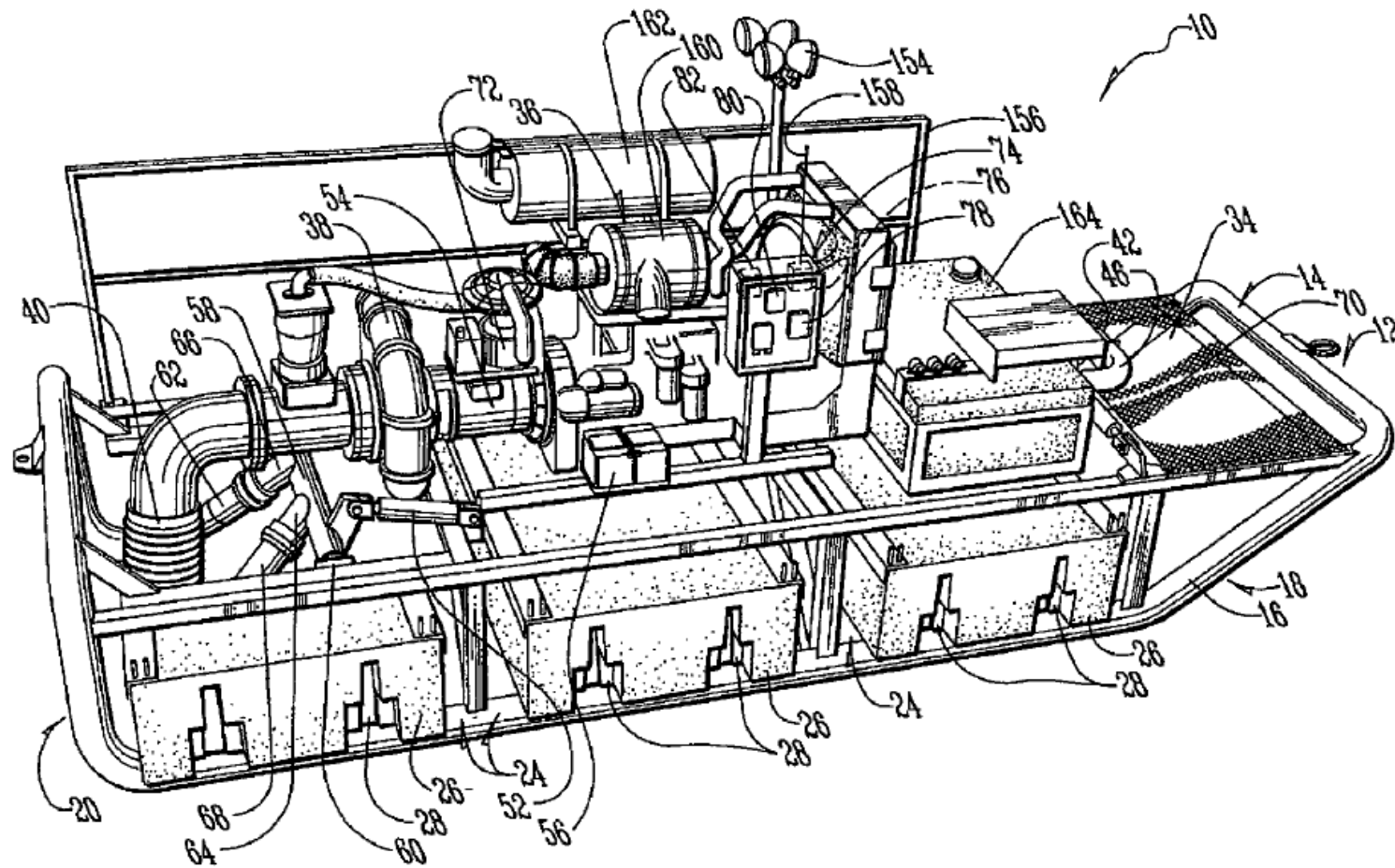


Figure 1



EX1014, FIG. 1  
EX1015, FIG. 1  
EX1157



# Puck's Engine Would Power Bryham's Hydraulic Transmission

- POSAs understood the benefits of a central power source.
  - POSAs understood that adding extra engines were heavier, costlier, took up extra space, and were therefore undesirable.
- EX1110, ¶¶193-196 (citing EX1133, 5; EX1150, 71-72; EX1129, 18).

The extra cost and complications of adding an engine to the implement prompted the re-introduction of the independent PTO.



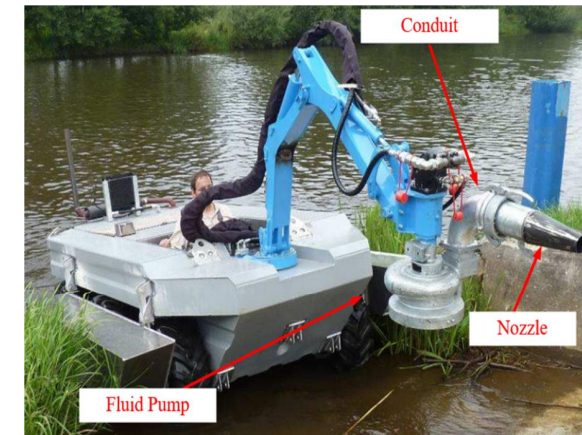
# Puck's Engine Would Power Bryham's Hydraulic Transmission

- Bazooka has always argued that:
  - One would use the hydraulic transmission of Bryham to power the liquid manure pump of Puck from the Puck power source. This is because a hydraulic transmission is one of a finite number of options for transmitting power on a moving vehicle and it has a high likelihood of success, given its widespread use for this purpose. Paper 2 at 87.
- Nuhn's arguments about Puck's hydraulic actuator do nothing to rebut this.

# Puck's Engine Would Power Bryham's Hydraulic Transmission



- Petitioner's expert, Dr. Winkel:** "It would have been obvious to use the hydraulic transmission of Bryham to power the liquid manure pump of Puck from the Puck power source, as a hydraulic transmission is one of a finite number of options for transmitting power on a moving vehicle and has a high likelihood of success, given the many known applications of hydraulic transmissions being used to power fluid pumps." EX1004, ¶350.

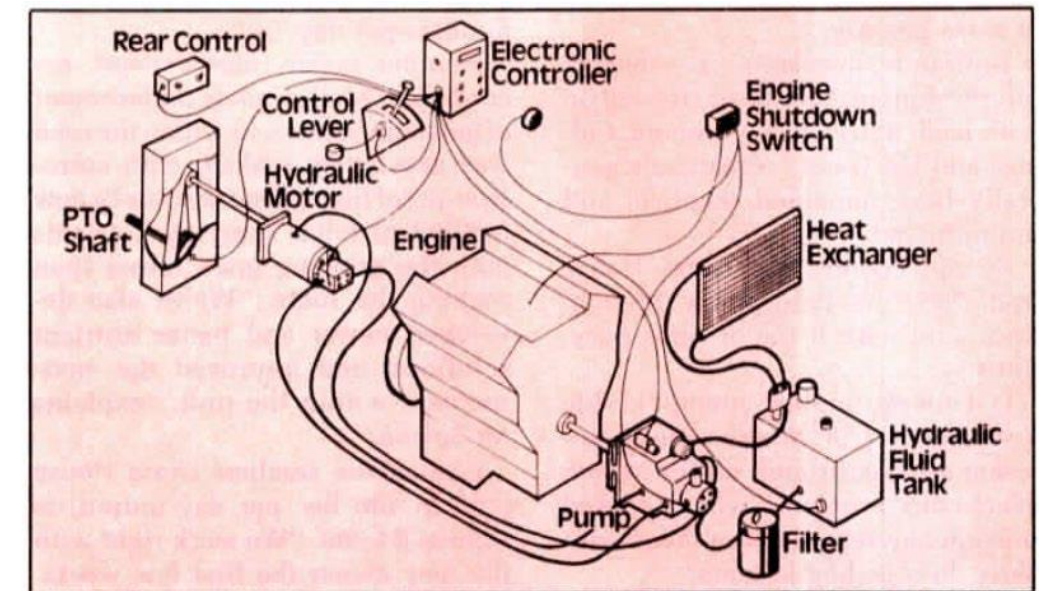


EX1006, 10; EX1009, 20; EX1012, 2; EX1159, 2

# Puck's Engine Would Power Bryham's Hydraulic Transmission



- **Petitioner's expert, Dr. Winkel:** "A POSA would have further understood that using the hydraulic drivetrain of Bryham to power the Puck pump with a PTO shaft would be trivial—as Mr. Prairie concedes (IPR2023-01161, EX2029 at ¶172), such configurations were well understood by POSAs since the 1970s."
  - EX1110, ¶¶188-196.





# Secondary Considerations

- Commercial success, long-felt unmet need, copying, praise by others, licensing, and skepticism arguments are the same as those advanced in the '425 Patent IPR.

# Secondary Considerations



- Nuhn's new "unexpected results":
  - Replacing "four (4) PTO-driven tractor mounted manure agitation pumps" was already advertised by Puck in 2011. Paper 22 at 37.



Puck Agitation Boat - Jeremy Puck



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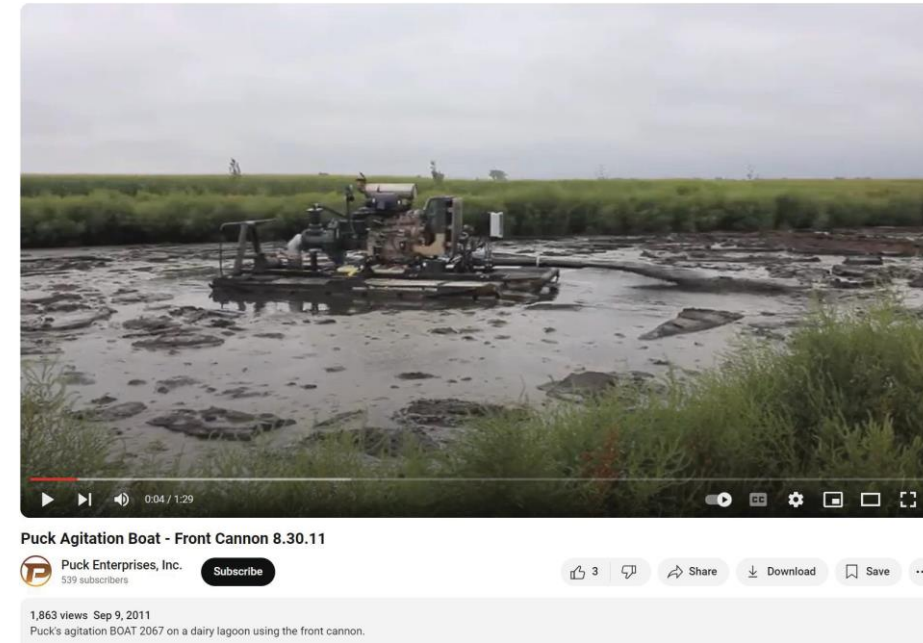
3,160 views Aug 10, 2011

Jeremy Puck explains the benefits of Puck's agitation boat.

# Secondary Considerations



- Puck floatable body created a “working pocket,” and hydraulic wheels were already used on SenwaTec to disrupt crust on waste lagoons. EX1073, ¶¶19, 26; EX1066, 3:54-4:25.



EX1121, ¶11;  
EX1066, 3:54-4:25