US011358425C1

(12) EX PARTE REEXAMINATION CERTIFICATE (12171st)

United States Patent

Nuhn

(10) Number: US 11,358,425 C1

(45) Certificate Issued: *Nov. 16, 2022

(54) **AMPHIBIOUS PUMPING VEHICLE**

(71) Applicant: **Nuhn Industries Ltd.**, Sebringville (CA)

(72) Inventor: **Ian Nuhn**, Sebringville (CA)

(73) Assignee: **NUHN INDUSTRIES LTD.**, Sebringville (CA)

Reexamination Request:
No. 90/019,107, Aug. 31, 2022

Reexamination Certificate for:

Patent No.:	**11,358,425**
Issued:	**Jun. 14, 2022**
Appl. No.:	**17/590,125**
Filed:	**Feb. 1, 2022**

(*) Notice: This patent is subject to a terminal disclaimer.

Related U.S. Application Data

(63) Continuation of application No. 17/201,100, filed on Mar. 15, 2021, now Pat. No. 11,491,835, which is a continuation of application No. 16/891,627, filed on Jun. 3, 2020, now Pat. No. 10,974,557, which is a continuation of application No. 16/157,950, filed on Oct. 11, 2018, now Pat. No. 10,710,422, which is a continuation of application No. 15/586,493, filed on May 4, 2017, now Pat. No. 10,124,638, which is a continuation of application No. 15/044,905, filed on Feb. 16, 2016, now Pat. No. 9,694,636, which is a continuation of application No. PCT/CA2014/050789, filed on Aug. 18, 2014.

(60) Provisional application No. 61/867,598, filed on Aug. 19, 2013.

(51) **Int. Cl.**

B60F 3/00	(2006.01)
A01C 23/04	(2006.01)
A01C 3/02	(2006.01)
B63H 25/02	(2006.01)
F04D 13/02	(2006.01)

(52) **U.S. Cl.**
CPC ***B60F 3/0061*** (2013.01); ***A01C 3/026*** (2013.01); ***A01C 23/045*** (2013.01); ***B60F 3/003*** (2013.01); ***B60F 3/0007*** (2013.01); ***B60F 3/0038*** (2013.01); ***B63H 25/02*** (2013.01); ***F04D 13/02*** (2013.01); *B60F 2301/00* (2013.01); *B63H 2025/028* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

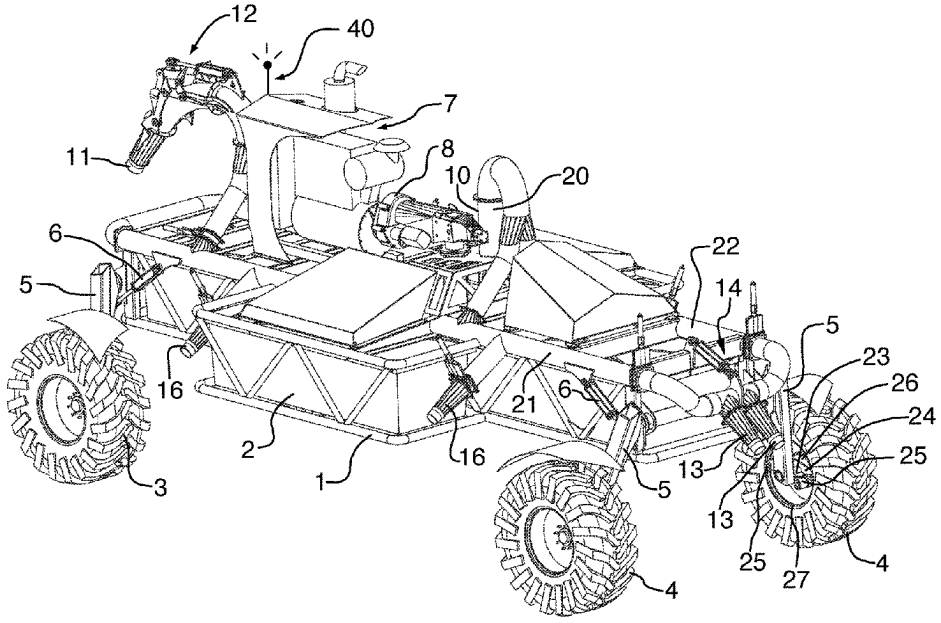
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/019,107, please refer to the USPTO's Patent Electronic System.

Primary Examiner — Joseph A Kaufman

(57) **ABSTRACT**

An amphibious vehicle has a floatable vehicle body; ground engaging propulsion structure having a plurality of ground engaging elements powered by a hydraulic motor; a fluid pump for pumping liquid manure; a power source connected to a hydraulic pump and configured to provide power to both the ground engaging propulsion structure and the fluid pump; and, remote control structure for controlling the ground engaging propulsion structure and a flow of fluid from the fluid pump. The speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating.



EX PARTE REEXAMINATION CERTIFICATE

NO AMENDMENTS HAVE BEEN MADE TO THE PATENT

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1-21** is confirmed.

* * * * *

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,107	08/31/2022	11358425	19061.0001USR2	2912

59115 7590 11/02/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER	
KAUFMAN, JOSEPH A	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
11/02/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,107* .

PATENT UNDER REEXAMINATION *11358425* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Notice of Intent to Issue Ex Parte Reexamination Certificate	**Control No.** 90/019,107	**Patent Under Reexamination** 11358425	
	Examiner JOSEPH A KAUFMAN	**Art Unit** 3993	**AIA Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☑ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   (a) ☐ Patent owner's communication(s) filed: _____.
   (b) ☐ Patent owner's failure to file an appropriate timely response to the Office action mailed: _____.
   (c) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   (d) ☐ The decision on appeal by the ☐ Board of Patent Appeals and Interferences ☐ Court dated _____
   (e) ☑ Other: the reexamination as filed.
2. The Reexamination Certificate will indicate the following:
   (a) Change in the Specification: ☐ Yes ☑ No
   (b) Change in the Drawing(s): ☐ Yes ☑ No
   (c) Status of the Claim(s):
      (1) Patent claim(s) confirmed: 1-21.
      (2) Patent claim(s) amended (including dependent on amended claim(s)): _____
      (3) Patent claim(s) canceled: _____.
      (4) Newly presented claim(s) patentable: _____.
      (5) Newly presented canceled claims: _____.
      (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
      (7) Patent claim(s) not subject to reexamination: _____.
3. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
4. ☑ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."
5. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).
6. ☐ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute).
7. ☐ The drawing correction request filed on _____ is: ☐approved ☐disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐None of the certified copies have
   ☐been received.
   ☐not been received.
   ☐been filed in Application No. _____.
   ☐been filed in reexamination Control No. _____.
   ☐been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.
9. ☐ Note attached Examiner's Amendment.
10. ☐ Note attached Interview Summary (PTO-474).
11. ☐ Other: _____.

All correspondence relating to this reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

/JOSEPH A KAUFMAN/ Reissue/Reexam Specialist, Art Unit 3993	

cc: Requester (if third party requester)

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

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.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

Please mail any communications to:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered.

By Mail to: Attn: Mail Stop "Ex Parte Reexam"
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Commissioner for Patents
United States Patent & Trademark Office
P. O. Box 1450
Alexandria VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Attn: Central Reexamination Unit
Randolph Building, Lobby Level
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed: /JOSEPH A KAUFMAN/
Reissue/Reexam Specialist, Art Unit 3993

Conferee:/WILLIAM C DOERRLER/
Reexamination Specialist, Art Unit 3993

Conferee: /Patricia L Engle/
Acting SPRS, Art Unit 3993

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Certificate Date	Certificate Number
		C1

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
MERCHANT & GOULD P.C. P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903

LITIGATION REVIEW ☑	JAK (examiner initials)	24 October 2022 (date)
Case Name		Director Initials
3:22cv44, Nunh Industries Ltd v. Bazooka Farmstar Llc, US Dist Ct. Iowa Southern, open.		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
Reexam on grandparent	90/019,076

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Examiner	**Art Unit**
	JOSEPH A KAUFMAN	3993

CPC						
Symbol					**Type**	**Version**
B60F	/	3	/	0061	F	2013-01-01
A01C	/	3	/	026	I	2013-01-01
A01C	/	23	/	045	I	2013-01-01
B60F	/	3	/	0007	I	2013-01-01
B60F	/	3	/	003	I	2013-01-01
B60F	/	3	/	0038	I	2013-01-01
B63H	/	25	/	02	I	2013-01-01
F04D	/	13	/	02	I	2013-01-01
B60F	/	2301	/	00	A	2013-01-01
B63H	/	2025	/	028	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	21	
/JOSEPH A KAUFMAN/ Reissue/Reexam Specialist, Art Unit 3993	24 October 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20221019

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 9 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Examiner	Art Unit
	JOSEPH A KAUFMAN	3993

INTERNATIONAL CLASSIFICATION				
CLAIMED				
B60F	/	3	/	00
A01C	/	23	/	04
A01C	/	3	/	02
B63H	/	25	/	02
F04D	/	13	/	02

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/JOSEPH A KAUFMAN/ Reissue/Reexam Specialist, Art Unit 3993	24 October 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221019

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 10 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Examiner	Art Unit
	JOSEPH A KAUFMAN	3993

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	21	
/JOSEPH A KAUFMAN/ Reissue/Reexam Specialist, Art Unit 3993	24 October 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20221019

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 11 of 1211

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Examiner	Art Unit
	JOSEPH A KAUFMAN	3993

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
reviewed prosecution history of the patent under reexamination		
searched for board proceedings on current patent, related patents and applications, none found	09/12/2022	JAK
reviewed 90/019,076, the reexam related to the grandparent application/patent	10/24/2022	JAK

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
none	none	10/24/2022	JAK

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 12 of 1211

Bibliographic Data

Application No: 90/019,107

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /JOSEPH A KAUFMAN/ Examiner's Signature | Initials

Title: AMPHIBIOUS PUMPING VEHICLE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/31/2022	440	3993	19061.0001USR2
RULE			

APPLICANTS

INVENTORS

11358425,

NUHN INDUSTRIES LTD. (Assignee), Sebringville, CANADA

MERCHANT & GOULD P.C. (3rd Pty Req), MINNEAPOLIS, MN, UNITED STATES

CONTINUING DATA

This application is a REX of 17590125 02/01/2022 PAT 11358425

17590125 is a CON of 17201100 03/15/2021 PAT 11491835

17201100 is a CON of 16891627 06/03/2020 PAT 10974557

16891627 is a CON of 16157950 10/11/2018 PAT 10710422

16157950 is a CON of 15586493 05/04/2017 PAT 10124638

15586493 is a CON of 15044905 02/16/2016 PAT 9694636

15044905 is a CON of PCT/CA2014/050789 08/18/2014

PCT/CA2014/050789 has PRO of 61867598 08/19/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

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Toronto, ON M5H 2Y4
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,107	08/31/2022	11358425	19061.0001USR2	2912

59115 7590 09/19/2022

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Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER	
KAUFMAN, JOSEPH A	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
09/19/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,107* .

PATENT UNDER REEXAMINATION *11358425* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting Request For Ex Parte Reexamination	Control No. 90/019,107	Patent Under Reexamination 11358425	
	Examiner JOSEPH A KAUFMAN	Art Unit 3993	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 08/31/2022 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☑ PTO/SB/08, c)☐ Other: ____

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

cc:Requester (if third party requester)

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DECISION

A substantial new question of patentability affecting claim 1-21 of United States Patent Number 11,358,425 is raised by the request for *ex parte* reexamination.

Service of Papers

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550(f).

Waiver of Right to File Patent Owner Statement

In a reexamination proceeding, Patent Owner may waive the right under 37 C.F.R. 1.530 to file a Patent Owner Statement. The document needs to contain a statement that Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement and proof of service in the manner provided by 37 C.F.R. 1.248, if the request for reexamination was made by a third party requester, see 37 C.F.R 1.550(f). The Patent Owner may consider using the following statement in a document waiving the right to file a Patent Owner Statement:

WAIVER OF RIGHT TO FILE PATENT OWNER STATEMENT

Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement.

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 11,358,425 throughout the course of this reexamination proceeding. Likewise, if present, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Substantial New Question of Patentability

It is agreed that Carrier I (US Patent Application Publication 2012/0185129), Carrier II (US Patent No. 7,478,817), and Puck (US Patent Application Publication 2014/0112093) raise a substantial new question of patentability regarding claims 1-21 of Nuhn. The prosecution history of the Nuhn patent indicates that the prior art of record did not teach the combination of elements as claimed. The Carrier references and Puck teach these features as noted in the request on at least pages 37-77.

The Carrier I publication was not considered in the prosecution of the application that became the Nuhn patent. Carrier II and Puck were cited as references, however, there is no evidence that they were considered in detail. Further, there is a substantial likelihood that a reasonable examiner would consider the teachings in these references important in deciding whether or not the claims are patentable. Therefore, Carrier I, II and Puck raise a substantial new question of patentability as to claims 1-21 which

question has not been decided in a previous examination of what became the Nuhn patent.

In the Request, an additional reference was listed and asserted to raise a substantial new question of patentability only as secondary references. Although the additional reference was discussed in appropriate claim charts throughout the request, the additional reference does not appear, in and of itself, to raise any substantial new question of patentability. The examiner does note, however, that while the reference is not considered to raise SNQs by itself, it will be considered during subsequent reexamination in the same manner as other documents in the Office search files, as well as to any additional degree in which the content and relevance of the information has been discussed or explained throughout the request.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

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By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered.

By Mail to: Attn: Mail Stop "Ex Parte Reexam"
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By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Attn: Central Reexamination Unit
Randolph Building, Lobby Level
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed: /JOSEPH A KAUFMAN/
Reissue/Reexam Specialist, Art Unit 3993

Conferee: /CATHERINE S WILLIAMS/
Reexamination Specialist, Art Unit 3993

Conferee: /Patricia L Engle/
Acting SPRS, Art Unit 3993

Reexamination	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Certificate Date	Certificate Number

Requester Correspondence Address: ☐ Patent Owner ☑ Third Party
MERCHANT & GOULD P.C. P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903

LITIGATION REVIEW ☑	JAK (examiner initials)	12 September 2022 (date)
Case Name		Director Initials
3:22cv44, Nunh Industries Ltd v. Bazooka Farmstar Llc, US Dist Ct. Iowa Southern, open.		

COPENDING OFFICE PROCEEDINGS	
TYPE OF PROCEEDING	NUMBER
Reexam on grandparent	90/019,076

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 23 of 1211

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	90/019,107	11358425
	Examiner	Art Unit
	JOSEPH A KAUFMAN	3993

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
reviewed prosecution history of the patent under reexamination		
searched for board proceedings on current patent, related patents and applications, none found	09/12/2022	JAK

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 24 of 1211

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-08-30
First Named Inventor	Ian Nuhn
Art Unit	
Examiner Name	
Attorney Docket Number	19061.0001USR2

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7478817	B1	2009-01-20	Carrier	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120185129	A1	2012-07-19	Carrier	
	2	20130033070	A1	2013-02-07	Kinsman et al.	
	3	20140112093	A1	2014-04-24	Puck	
	4	20140288763	A1	2014-09-25	Bennett et al.	

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-08-30
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USR2

	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

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EXAMINER SIGNATURE

Examiner Signature	/JOSEPH A KAUFMAN/	Date Considered	09/12/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.A.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-08-30
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USR2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A. Kalinsky/	Date (YYYY-MM-DD)	2022-08-30
Name/Print	Robert A. Kalinsky	Registration Number	50471

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.A.R/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Bibliographic Data

Application No: 90/019,107

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /JOSEPH A KAUFMAN/ (Examiner's Signature) | (Initials)

Title: AMPHIBIOUS PUMPING VEHICLE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/31/2022	440	3993	19061.0001USR2
RULE			

APPLICANTS

INVENTORS

11358425,

NUHN INDUSTRIES LTD. (Assignee), Sebringville, CANADA

MERCHANT & GOULD P.C. (3rd Pty Req), MINNEAPOLIS, MN, UNITED STATES

CONTINUING DATA

This application is a REX of 17590125 02/01/2022 PAT 11358425

17590125 is a CON of 17201100 03/15/2021

17201100 is a CON of 16891627 06/03/2020 PAT 10974557

16891627 is a CON of 16157950 10/11/2018 PAT 10710422

16157950 is a CON of 15586493 05/04/2017 PAT 10124638

15586493 is a CON of 15044905 02/16/2016 PAT 9694636

15044905 is a CON of PCT/CA2014/050789 08/18/2014

PCT/CA2014/050789 has PRO of 61867598 08/19/2013

FOREIGN APPLICATIONS

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ADDRESS

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

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$225

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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,107	08/31/2022	11358425	19061.0001USR2	2912

59115 7590 09/13/2022

BRUNET & CO. LTD.
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Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER	
KAUFMAN, JOSEPH A	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
09/13/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,107* .

PATENT UNDER REEXAMINATION *11358425* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/019,107	Patent Under Reexamination is Requested 11358425	
	Examiner MANUEL SALDANA JR	Art Unit 3993	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) MANUEL SALDANA, CRU (3) _____

(2) ROBERT BRUNET REG. 55158 (4) _____

Date of Telephonic Interview: 08 September 2022.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☑ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☐ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings, 75 Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/MANUEL SALDANA/ (571)272-7740
Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/019,107	08/31/2022	11358425

CONFIRMATION NO. 2912

MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

REEXAMINATION REQUEST NOTICE

OC000000136227629

Date Mailed: 09/08/2022

NOTICE OF REEXAMINATION REQUEST FILING DATE

(Third Party Requester)

Requester is hereby notified that the filing date of the request for reexamination is 08/31/2022, the date that the filing requirements of 37 CFR § 1.510 were received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner
59115
BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

/tplovelace/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

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REEXAM CONTROL NUMBER	FILING OR 371 (c) DATE	PATENT NUMBER
90/019,107	08/31/2022	11358425

CONFIRMATION NO. 2912

REEXAM ASSIGNMENT NOTICE

59115
BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

OC000000136227631

Date Mailed: 09/08/2022

NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 3993. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

NOTICE OF USPTO EX PARTE REEXAMINATION PATENT OWNER STATEMENT WAIVER PROGRAM

The USPTO has implemented a pilot program where, after a reexamination proceeding has been granted a filing date and before the examiner begins his or her review, the patent owner may orally waive the right to file a patent owner's statement. See *"Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings,"* 75 FR 47269 (August 5, 2010). One goal of the pilot program is to reduce the pendency of reexamination proceedings and improve the efficiency of the reexamination process.

Ordinarily when ex parte reexamination is ordered, the USPTO must wait until after the receipt of the patent owner's statement and the third party requester's reply, or after the expiration of the time period for filing the statement and reply (a period that can be as long as 5 to 6 months), before mailing a first determination of patentability. The USPTO's first determination of patentability is usually a first Office action on the merits or a Notice of Intent to Issue Reexamination Certificate (NIRC).

Under the pilot program, the patent owner's oral waiver allows the USPTO to act on the first determination of patentability immediately after determining that reexamination will be ordered, and in a suitable case issue the reexamination order and the first determination of patentability (which could be a NIRC if the claims under reexamination are confirmed) at the same time.

Benefits to the Patent Owner for participating in this pilot program include reduction in pendency.

To participate in this pilot program, Patent Owners may contact the USPTO's Central Reexamination Unit (CRU) at 571-272-7705. The USPTO will make the oral waiver of record in the reexamination file in an interview summary and a copy will be mailed to the patent owner and any third party requester.

cc: Third Party Requester(if any)
MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

/tplovelace/

Legal Instruments Examiner
Central Reexamination Unit 571-272-7705; FAX No. 571-273-9900

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 35 of 1211

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CONFIRMATION NO. 2912

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
90/019,107	08/31/2022	440	3993	19061.0001USR2

APPLICANTS

INVENTORS

11358425, Residence Not Provided;
NUHN INDUSTRIES LTD. (Assignee), Sebringville, CANADA;
MERCHANT & GOULD P.C. (3rd Pty Req), MINNEAPOLIS, MN;
MERCHANT & GOULD P.C., MINNEAPOLIS, MN

**** CONTINUING DATA ***************************

This application is a REX of 17/590,125 02/01/2022 PAT 11358425
which is a CON of 17/201,100 03/15/2021
which is a CON of 16/891,627 06/03/2020 PAT 10974557
which is a CON of 16/157,950 10/11/2018 PAT 10710422
which is a CON of 15/586,493 05/04/2017 PAT 10124638
which is a CON of 15/044,905 02/16/2016 PAT 9694636
which is a CON of PCT/CA2014/050789 08/18/2014
which claims benefit of 61/867,598 08/19/2013

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **

Foreign Priority claimed ❑ Yes ❑ No 35 USC 119(a-d) conditions met ❑ Yes ❑ No Verified and Acknowledged _____ Examiner's Signature	❑ Met after Allowance _____ Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
				21	1

ADDRESS

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401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

TITLE

AMPHIBIOUS PUMPING VEHICLE

FILING FEE RECEIVED		
6300	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

BIB (Rev. 05/07).

Patent Assignment Abstract of Title

Total Assignments: 2

Application #: 17590125 **Filing Dt:** 02/01/2022 **Patent #:** 11358425 **Issue Dt:** 06/14/2022
PCT #: NONE **Intl Reg #:** **Publication #:** US20220176762 **Pub Dt:** 06/09/2022
Inventor: Ian Nuhn
Title: AMPHIBIOUS PUMPING VEHICLE

Assignment: 1

Reel/Frame: 058844 / 0507 **Received:** 02/01/2022 **Recorded:** 02/01/2022 **Mailed:** 02/02/2022 **Pages:** 2
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: NUHN, IAN **Exec Dt:** 10/23/2013
Assignee: NUHN INDUSTRIES LTD.
P.O. BOX 160
SEBRINGVILLE, CANADA N0K 1X0
Correspondent: BRUNET & CO. LTD
401 BAY STREET, SUITE 1600
TORONTO, M5H 2Y4 CANADA

Assignment: 2

Reel/Frame: 059957 / 0273 **Received:** 05/19/2022 **Recorded:** 05/19/2022 **Mailed:** 05/23/2022 **Pages:** 3
Conveyance: ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).
Assignor: NUHN, IAN **Exec Dt:** 04/07/2022
Assignee: NUHN INDUSTRIES LTD.
4816 LINE 34
PO BOX 160
SEBRINGVILLE, ONTARIO, CANADA N0K 1X0
Correspondent: HARNESS, DICKEY & PIERCE PLC
5445 CORPORATE DRIVE
SUITE 200
TROY, MI 48098

Search Results as of: 09/04/2022 09:12 AM

If you have any comments or questions concerning the data displayed, contact PRD / Assignments at 571-272-3350. v.2.6
Web interface last modified: Jun 26, 2017 v.2.6

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-08-30
First Named Inventor	Ian Nuhn
Art Unit	
Examiner Name	
Attorney Docket Number	19061.0001USR2

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7478817	B1	2009-01-20	Carrier	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120185129	A1	2012-07-19	Carrier	
	2	20130033070	A1	2013-02-07	Kinsman et al.	
	3	20140112093	A1	2014-04-24	Puck	
	4	20140288763	A1	2014-09-25	Bennett et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-08-30
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USR2

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-08-30
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USR2

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A. Kalinsky/	Date (YYYY-MM-DD)	2022-08-30
Name/Print	Robert A. Kalinsky	Registration Number	50471

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

EXHIBIT G

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	
Ian Nuhn	
Patent No. 10,974,557	
Issued April 13, 2021	
For AMPHIBIOUS PUMPING VEHICLE	

DETAILED REQUEST FOR *EX PARTE* PATENT REEXAMINATION

Mail Stop *Ex Parte* Reexam
ATTN: Central Reexamination unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Pursuant to 37 CFR §1.510, Bazooka-Farmstar, LLC ("Requester"), the real party in interest and third-party requester herein, respectfully requests *ex parte* reexamination of claims 1-13 of U.S. Patent No. 10,974,557 ("the '557 patent"). A Request for *Ex Parte* Reexamination Transmittal Form (PTO/SB/57) is attached hereto.

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List of Exhibits

Exhibit A	U.S. Patent No. 10,974,557 to Nuhn ("the '557 patent")
Exhibit B	U.S. Patent No. 7,478,817 to Carrier ("Carrier")
Exhibit C	U.S. Patent Application Publication No. 2014/0112093 to Puck ("Puck")
Exhibit D	U.S. Patent No. 7,833,071 to Gaither ("Gaither")
Exhibit E	U.S. Patent Application Publication No. 2014/0288763 to Bennett ("Bennett")
Exhibit F	File History for U.S. Patent No. 10,974,557
Exhibit G	Claim Chart for Ground 1 (Carrier)
Exhibit H	Claim Chart for Ground 2 (Carrier in View of Puck)
Exhibit I	Claim Chart for Ground 3 (Carrier in View of Puck and Gaither)
Exhibit J	Claim Chart for Ground 4 (Puck in View of Bennett)
Exhibit K	U.S. Patent Application Publication No. 2013/0033070 to Kinsman ("Kinsman")

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I. Introduction

Bazooka-Farmstar, LLC ("Requester" or "Bazooka") respectfully requests *ex parte* reexamination under 35 U.S.C. §§ 301-307 and 37 C.F.R. § 1.510 *et seq.* of claims 1-13 of U.S. Patent No. 10,974,557 ("the '557 patent"), a copy of which is attached as Exhibit A ("Request"). These claims may be referred to herein individually, or collectively as the claims subject to reexamination. The '557 patent issued on April 13, 2021, listing Ian Nuhn as the sole inventor. The '557 patent is believed to be currently assigned to Nuhn Industries Ltd. ("Applicant"). This is a new request for *ex parte* reexamination.

The '557 patent relates to an amphibious pumping vehicle with a floatable vehicle body, a ground engaging propulsion structure, a fluid pump, a fluid conduit, a fluid nozzle connected to the fluid conduit, and a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump. ('557 Pat., Abstr.) The present Request provides ample evidence that such limitations were well-known in the art and provides additional evidence that all claims of the '557 patent were anticipated or obvious over known art at the time of the invention.

For the reasons detailed herein, there is significant new prior art that raises substantial new questions of patentability with respect to the claims of the '557 patent.

II. Notice of Co-Pending Litigation

Pursuant to MPEP § 2282, Applicant has asserted the '557 patent in patent litigation entitled *Nuhn Industries Ltd. v. Bazooka Farmstar LLC and Tasch's Custom LLC* in the United States District Court for the Eastern District of Wisconsin, Civil Action No. 2:21-cv-01322, and *Nuhn Industries Ltd. v. Bazooka Farmstar, LLC* in the United States District Court for the Southern District of Iowa, Civil Action No. 3:22-cv-00015-SMA-HCA.

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III. Citation of Prior Patents and Printed Publications Presented to Show Substantial New Questions of Patentability

Reexamination of the '557 patent is requested in view of prior art references described herein, as they would have been understood by one of ordinary skill in the art at the time of the invention of the '557 patent. The following references raise substantial new questions of patentability with respect to claims 1-13:

1) U.S. Patent No. 7,478,817 to **Carrier**, attached as Exhibit B ("Carrier");

2) U.S. Patent Application Publication No. 2014/0112093 to **Puck**, attached as Exhibit C ("Puck");

3) U.S. Patent No. 7,833,071 to **Gaither**, attached as Exhibit D ("Gaither"); and

4) U.S. Patent Application Publication No. 2014/0288763 to **Bennett**, attached as Exhibit E ("Bennett").

IV. Overview of Applicable Patent Law

The prior art presented as raising substantial new questions of patentability, alone or in combination, teach the limitations of the claims subject to reexamination. Therefore, the cited prior art establishes a prima facie case of unpatentability for every claim of the '557 patent, as described in detail with respect to Grounds 1 through 4 below.

A. Claim Construction

Claims in a reexamination are to be given their broadest reasonable interpretation consistent with the specification, and limitations in the specification are not to be read into the claims. *See In re Am. Academy of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004); *In re Yamamoto,* 740 F.2d 1569, 1571 (Fed. Cir. 1984). Although the specification may aid the understanding of claim language, limitations in the specification that are not part of the claim cannot be imported. *Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004).

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For example, when the claim language is broader than a disclosed embodiment, the features of the disclosed embodiment may not be read into a claim. *Id.* Furthermore, during reexamination, the claims must be interpreted as broadly as their terms reasonably allow. *In re Am. Academy of Sci. Tech. Ctr.*, 367 F.3d at 1369.

"The [Patent Office] broadly interprets claims during examination of a patent application because the applicant may 'amend his claims to obtain protection commensurate with his actual contribution to the art.'" *In re Yamamoto*, 740 F.2d at 1571 (citing *In re Prater*, 415 F.2d at 1405 n.31). According to the Federal Circuit, "[t]his approach serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified. Applicants' interests are not impaired since they are not foreclosed from obtaining appropriate coverage for their invention with express claim language." *In re Yamamoto*, 740 F.2d at 1571.

The broadest reasonable interpretation must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F3d 1353, 1358 (Fed. Cir. 1999). The inquiry regarding the meaning of a claim should focus on what would be reasonable from the perspective of one of ordinary skill in the art. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010); *In re Buszard*, 504 F.3d 1364, 1369-70 (Fed. Cir. 2007).

B. Legal Basis for Substantial New Question of Patentability

This Request relies on prior art not previously considered by the PTO. The fact that a patent or printed publication was previously cited by or to the Office or considered by the Office does not preclude the existence of a substantial new question of patentability. *In re Swanson,* 540 F.3d 1368, 1379-80 (Fed. Cir. 2008). Instead, the focus is whether the Patent Office previously fully and completely evaluated the particular question of patentability presented by the reference cited during reexamination. *Id.* at 1380 ("[T]o decide whether a reference that was previously considered by the PTO creates a substantial new question of patentability, the PTO should evaluate the context

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in which the reference was previously considered and the scope of the prior consideration and determine whether the reference is now being considered for a substantially different purpose."); *see also Ex parte Rozman*, 2021 Pat. App. LEXIS 4649, at *5-6 (PTAB August 19, 2021).

Consistent with the *Swanson* decision, MPEP § 2258 provides that "[f]or a reexamination that was ordered on or after November 2, 2002 . . . reliance solely on old art (as the basis for a rejection) does not necessarily preclude the existence of a substantial new question of patentability (SNQ) that is based exclusively on that old art." Thus, "a SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s)." *Id. See also* 35 U.S.C. § 303(a) ("[T]he existence of a substantial new question of patentability is not precluded by the fact that a patent or printed publication was previously cited by or to the Office or considered by the Office."); MPEP § 2216 ("The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination.").

Each of the cited references not previously considered by the examiner present substantial new questions of patentability both alone and in combination with the prior art references previously before the Examiner.

C. Obviousness

The Patent Office has issued "Examination Guidelines for Determining Obviousness Under 35 U.S.C. § 103 in view of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*" *See* 72 Fed. Reg. 57,526 (Oct. 10, 2007) (hereinafter "Examination Guidelines"). According to the Examination Guidelines, "the Supreme Court particularly emphasized 'the need for caution in granting a patent based on the combination of elements found in the prior art'" 72 Fed. Reg. at 57,526 (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415 (2007)). After detailing the role of

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the Office, the guidelines state that "the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge." *Id.* at 57,527. As articulated by the Supreme Court in *KSR*, the "person of ordinary skill" should be viewed as "a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421.

Art that is analogous to the subject matter of the patent may properly be used as an obviousness reference. MPEP § 2141.01. Prior art is analogous if one of two conditions are met: (1) the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004). A reference is reasonably pertinent if, regardless of its field, it logically would have commended itself to an inventor's attention in considering his problem. MPEP § 2141.01(a).

KSR applies "an expansive and flexible approach" to the obviousness inquiry, rather than requiring the "rigid approach" of the prior "teaching, suggestion, or motivation" (TSM) test. *KSR*, 550 U.S. at 415. *KSR* reiterated the well-established principle that a "patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men." *Id.* at 415-16. Indeed, "a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR*, 550 U.S. at 416 (quotation omitted). In other words, "when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in

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the field, the combination must do more than yield a predictable result." *Id.* Moreover, "when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." *Id.* at 417 (quotation omitted).

In order to determine whether it would have been obvious to combine prior art references, *KSR* recognizes:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 417. "[A] court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id. KSR* authorizes the courts "to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *Id.* at 418. "[T]he analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* "When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *Id.* at 421.

Although *KSR* held that the Federal Circuit's prior "teaching, suggestion, motivation" (TSM) was overly narrow, prior art explicitly or implicitly providing a suggestion or motivation

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to combine is useful when determining obviousness. *KSR*, 550 U.S. at 419; *Intex Rec. Corp. v. Team Worldwide Corp.*, 860 F. App'x 717, 723 (Fed. Cir. 2021) (explaining that "the teaching, suggestion, or motivation test . . . [is] a helpful insight") (quotation omitted). "A suggestion or motivation to modify prior art teachings may appear in the content of the public prior art, in the nature of the problem addressed by the invention, or even in the knowledge of one of ordinary skill in the art." *Princeton Biochems., Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1338 (Fed. Cir. 2005) The absence of some explicit instruction to modify or combine does not preclude a conclusion of obviousness. *In re Beattie*, 974 F.2d 1309, 1312 (Fed. Cir. 1992).

When determining whether an invention is obvious, the Examination Guidelines instruct Examiners to "first obtain a thorough understanding of the invention disclosed and claimed in the application under examination by reading the specification, including the claims, to understand what the applicant has invented. The scope of the claimed invention must be clearly determined by giving the claims the 'broadest reasonable interpretation consistent with the specification.'" 72 Fed. Reg. at 57,527; *see also* MPEP § 2141. Of the rationales relevant to an obviousness determination discussed in the Examination Guidelines, at least the following are pertinent to this reexamination request:

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of a known technique to improve similar devices (methods, or products) in the same way;

(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

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(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

See 72 Fed. Reg. at 57,529; *see also* MPEP § 2141.

V. Review of the '557 Patent

A. Disclosure of the '557 Patent

The '557 patent relates to amphibious vehicles equipped for pumping a liquid from a farm lagoon or holding pond, such as liquid animal manure. ('557 Pat., Col. 1:23-27.) The technical field states: "The invention relates to pumps and vehicles equipped for pumping." ('557 Pat., Col. 1:23-24.)

Amphibious vehicles configured for operation on land and in water were known in the art when the '557 patent was filed, including in U.S. Patent No. 7,833,071 to Gaither.[1]

Pumps for manure lagoons were likewise known in the art at the time the '557 patent was filed. The '557 patent explains:

> Manure produced during animal husbandry, particularly hog and cattle manure, is transferred by washing to a pit or lagoon for storage prior to 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 the removal of the manure. Pumps are employed for this purpose with jets that return a percentage of the manure back to the pit or lagoon in the form of a high volume spray to disrupt the crust and recirculate the manure.

('557 Pat., Col. 1:31-39.)

[1] Gaither itself discloses an amphibious, all-terrain vehicle and identifies many amphibious vehicles when surveying the related art, including those disclosed in U.S. Patent No. 3,664,451; U.S. Patent No. 4,744,324; U.S. Patent No. 6,672,916; U.S. Patent No. 3,444,837; U.S. Patent No. 3,199,486; U.S. Patent No. 5,993,273; U.S. Patent No. 6,666,735; U.S. Patent No. 4,664,051; and U.S. Patent No. 3,385,255. (*See* Gaither, Col. 1:28 – Col. 2:56.)

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These pumps for manure lagoons identified by the '557 Patent were only accessible from the side of the lagoon and required the use of a tractor or other vehicle to operate. They were thus limited in the ability to recirculate manure in the middle of large lagoons:

> Pumps for use in recirculating manure from smaller pits are known; however, these pumps are typically suitable for accessing the pit or lagoon from its edge 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 [*sic*] common as the size of animal husbandry operations increases.

('557 Pat., Col. 1:39-48.) Therefore, the '557 patent identifies the problem of reaching, and thus agitating, the entire lagoon from shore as the lagoons increase in size.

The solution to this problem identified by the '557 patent was to include a pump on an amphibious vehicle suitable for use with large manure lagoons. ('557 Pat., Col. 1:49-51.) The '557 patent is directed to an amphibious pumping vehicle. The Summary of the Invention explains that the amphibious pumping vehicle includes the following elements: a floatable vehicle body; a ground engaging propulsion structure; a fluid pump; a fluid nozzle connected by a fluid conduit to a fluid pump; and a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump. ('557 Pat., Col. 1:55-62.) The Summary of the Invention also explains that the vehicle may be remotely controlled. ('557 Pat., Col. 4:32-58.)

Each of these structures will be addressed in turn:

Vehicle Body: The '557 patent discloses a floatable vehicle body and explains that "[f]lotation of the vehicle body may be provided by a displacement hull, pontoon elements, or buoyant elements." ('557 Pat., Col. 1:64-66.) The floatable vehicle body 1 is depicted in Figure 1.

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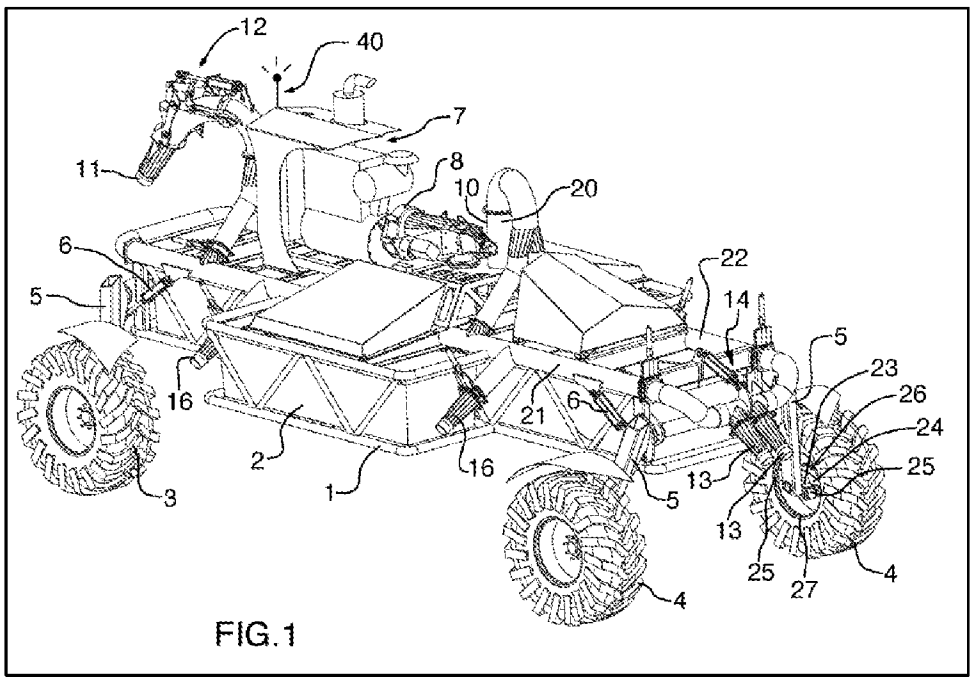


FIG.1

('557 Pat., Fig. 1.)

Ground Engaging Propulsion Structure: The '557 patent explains that the ground engaging propulsion structure "may comprise an endless track or a set of wheels." ('557 Pat., Col. 2:6-8.) "The set of wheels may comprise two or more wheels, for example four wheels, six wheels, or eight wheels." ('557 Pat., Col. 2:8-10.) It further explains that when the vehicle comprises a set of wheels, "any number of the wheels may be driven to provide propulsion to the vehicle." ('557 Pat., Col. 2:12-14.)

The '557 patent discloses propulsion using hydraulic motors. It explains that "it is preferred that the wheels are independently driven at variable speeds, allowing them to be fixed in direction relative to the vehicle body" and that "at least one motor may be connected to each wheel that is hydraulically . . . operable at variable speed." ('557 Pat., Col. 2:17-20, 25-27.) This arrangement "provides directional control of the vehicle, even in wet or muddy conditions where conventional steering is likely to be ineffective due to sliding of the steerable set of wheels." ('557 Pat., Col. 2:20-23.) The hydraulic motors 25 are shown in Figure 4.

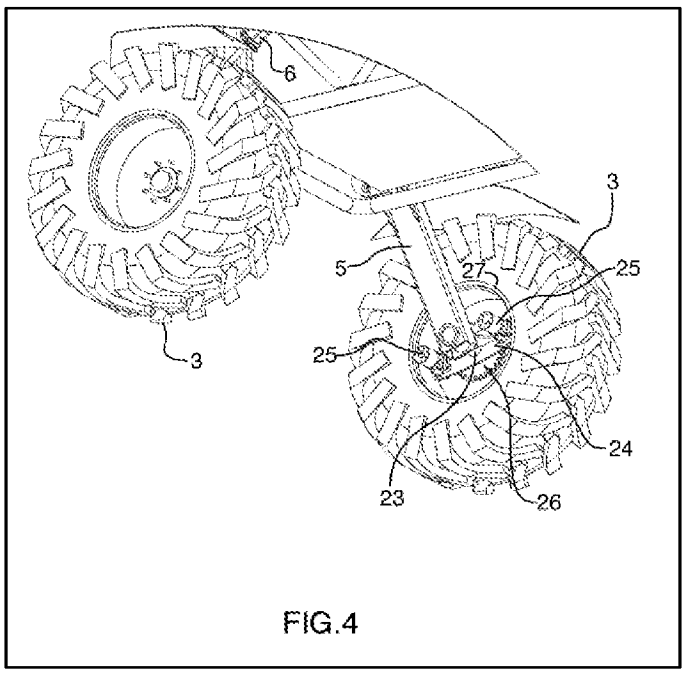


FIG.4

('557 Pat., Fig. 4.)

The '557 patent further explains that the amphibious vehicle is steered by varying the speed between the hydraulic motors on the right side and the left side of the vehicle: "By 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. . . . Thus, directional and motive control of the vehicle (forward/reverse) while on land is controlled by varying the relative speed and rotational direction of the hydraulic motors 25." ('557 Pat., Col. 6:32-40.)

Fluid Pump: The '557 patent discloses a fluid pump that is mounted on the amphibious vehicle. ('557 Pat., Col. 2:65 – Col. 3:13.) The fluid pump includes a pump housing 18 with multiple fluid outlets 19 that are combined into a single fluid conduit 20, as shown in Figure 8.

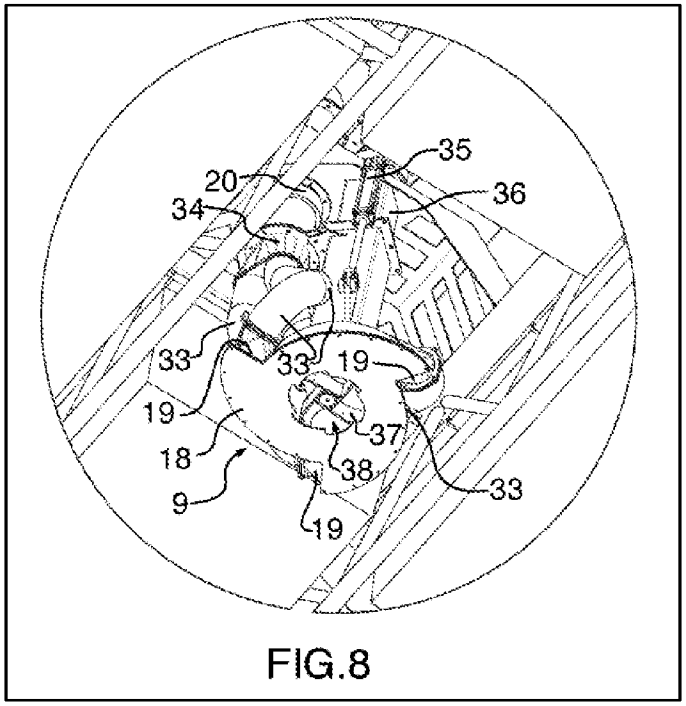


FIG.8

('557 Pat., Fig. 8.)

Referring to Figure 8, the '557 patent further explains: "[T]he fluid pump 9 comprises a pump housing 18 comprising three tangential fluid outlets 19 that are connected via flexible pump outlet conduits 33 to a combiner 34 that is used to combine the fluid output of the tangential fluid outlets 19 into the single conduit 20." ('557 Pat., Col. 7:20-24.)

While the '557 patent notes that the fluid pump may be used "for pumping liquid manure," *e.g.*, Claim 1, it does not teach any specific associated structure necessary for pumping liquid manure. The '557 patent simply explains that the housing of the fluid pump "may comprise a bottom fluid inlet and at least two tangential fluid outlets" and that "[t]he tangential fluid outlets may be combined into a single fluid conduit for directing the combined output of the fluid pump to a desired location." ('557 Pat., Col. 2:66 – Col. 3:5.) This is consistent with the broad Technical Field description which is not limited to pumping manure: "The invention relates to pumps and vehicles equipped for pumping." ('557 Pat., Col. 1:23-24.)

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Fluid Nozzle: The '557 patent discloses a nozzle that is connected by a fluid conduit to the fluid pump. ('557 Pat., Col. 3:21-43.) The '557 patent explains that the amphibious pumping vehicle "comprises a first fluid nozzle configured to direct fluid through the air" and that "[t]he fluid nozzle is connected by fluid conduit to the fluid pump." ('557 Pat., Col. 3:21-23.) The vehicle may include "a plurality of fluid nozzles comprising the first fluid nozzle and at least one second fluid nozzle connected to the fluid conduit." ('557 Pat., Col. 3:26-28.) Every disclosed embodiment includes a nozzle, which is used for propulsion and directional control.

Fluid Conduit: The '557 patent teaches that the nozzle is a separate structure than the fluid conduit. The fluid pump 9 is connected to all the fluid nozzles 11 of the vehicle via the fluid conduits 20-22, as shown in Figure 5.

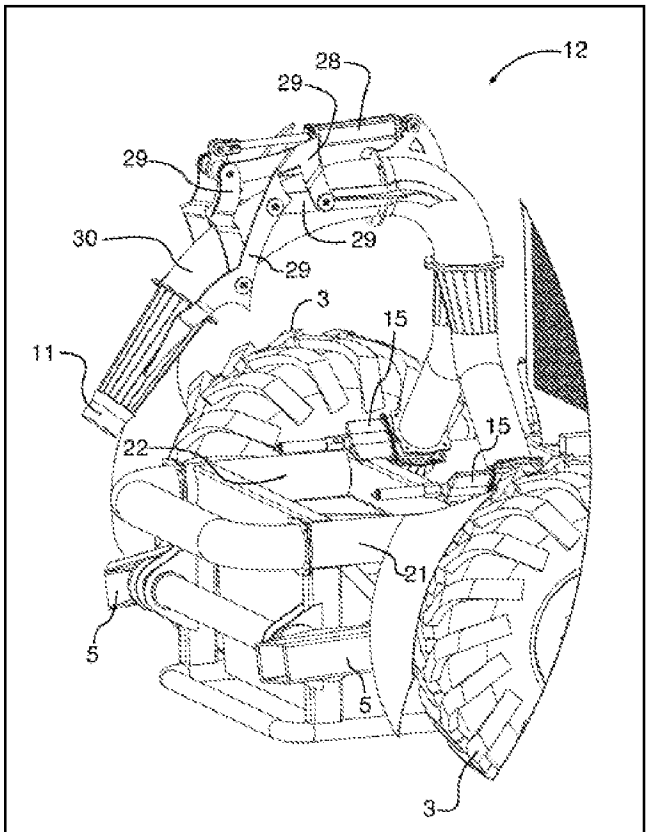


FIG.5

('557 Pat., Fig. 5.)

The specification of the '557 Patent is also clear that the nozzle and the fluid conduit are separate and distinct structures:

- . . . the fluid nozzle connected by a fluid conduit to the fluid pump ('557 Pat., Col. 1:59-60);
- The fluid nozzle is connected by fluid conduit to the fluid pump. The fluid conduit connecting the fluid nozzle to the fluid pump may comprise the single fluid conduit that is connected to the tangential fluid outlets of the pump. The vehicle may further comprise a plurality of fluid nozzles comprising the first fluid nozzle and at least one second fluid nozzle connected to the fluid conduit. ('557 Pat., Col. 3:22-28); and
- The at least two side fluid nozzles may comprise a pair of fluid nozzles on opposite sides of the vehicle connected to the fluid conduit ('557 Pat., Col. 3:33-35).

Referring to Figure 5 above, the '557 patent explains: "The first fluid nozzle 11 is connected to the fluid conduits 21, 22 via a flexible conduit 30 that permits articulation of the nozzle." ('557 Pat., Col. 6:50-52.)

Power Source: The '557 patent explains that the power source may include an internal combustion engine, for example a diesel engine, mounted to the vehicle body. ('557 Patent, Col. 5:36-38.) "A mechanical drive 8 connects the power source 7 to the hydraulic pump 10 that is used to provide hydraulic system fluid pressure for the vehicle" ('557 Patent, Col. 5:38-41), as shown in Figure 7:

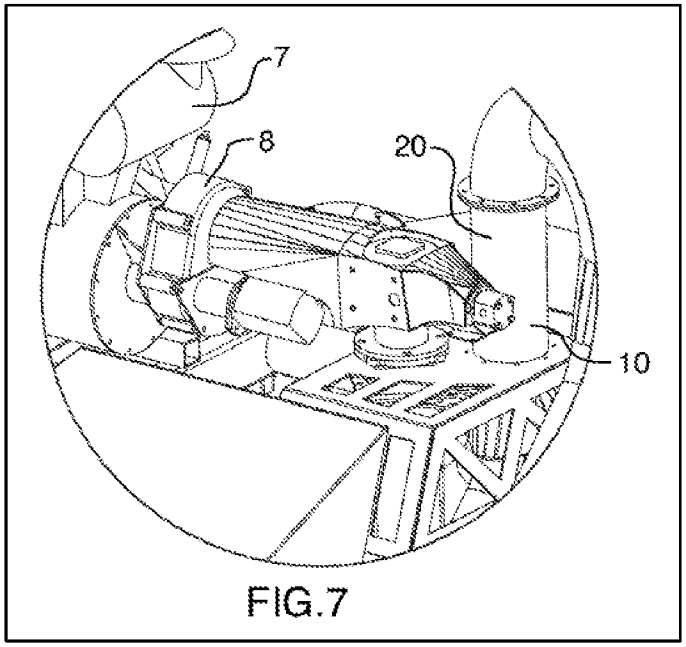


FIG.7

('557 Pat., Fig. 7.)

The '557 patent explains that the power structure "may be self-contained on the vehicle" and that the power source "may comprise an internal combustion engine, a fuel-cell, [or] electric batteries." ('557 Pat., Col. 2:43-46.) It also explains that the "power source may be connected to a hydraulic pump for supplying hydraulic fluid pressure to hydraulic systems on board the vehicle." ('557 Pat., Col. 2:50-53.)

Remote Control: The '557 patent also discloses that the amphibious vehicle may be operated using a remote control system: "The vehicle may comprise remote control structure configured to cause the vehicle to be remotely controllable by an operator remote from the vehicle." ('557 Pat., Col. 4:32-34.) The '557 patent explains that "[t]he vehicle may be remotely controllable by an operator remote from the vehicle . . . ." ('557 Pat., Col. 4:34-37.) The remote control structure allows the operator to control vehicle speed and direction on land or when floating. ('557 Pat., Col. 4:34-37.)

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As the Request shows, the solution disclosed in the '557 patent to the problem the '557 patent seeks to address, namely the use of an amphibious vehicle including a fluid pump for agitation of manure lagoons, was known, disclosed, and solved in the prior art in well before the effective filing date of the '557 patent.

B. Prosecution History

The U.S. Patent Application No. 16/891,627 that led to the grant of the '557 patent was filed on June 3, 2020. The application No. 16/891,627 is a continuation of application No. 16/157,950, filed on October 11, 2018, which is a continuation of application No. 15/586,493, filed on May 4, 2017, which is a continuation of application No. 15/044,905, filed on February 16, 2016, which is a continuation of application No. PCT/CA2014/050789, filed on August 18, 2014.[2] The prosecution history for the '557 patent is attached hereto as Exhibit F.

The Examiner issued a non-final office action on September 14, 2021 ("Non-Final Office Action"). In the Non-Final Office Action, the Examiner rejected application Claims 1-3, 7-8, 10, 12-13, and 16-20 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,176,098 to Royle ("Royle") in view of U.S. Patent No. 3,384,047 to Remley ("Remley") and U.S. Patent Application Publication No. 2014/0112093 to Puck ("Puck"). (*See* Non-Final Office Action, September 14, 2020, at p. 2.) Specifically, the Examiner determined:

[2] The priority claim for the '557 patent is inconsistent. The patent application that matured into the '557 patent identified the application with reference to No. PCT/CA2014/050789, filed on Aug. 18, 2014, which claims the benefit of Provisional application No. 61/867,598, filed on Aug. 19, 2013. Applicant later amended its Application Disclosure Sheet to state that the application was a continuation of No. PCT/CA2014/050789, filed on Aug. 18, 2014, which claims the benefit of Provisional application No. 61/867,598, filed on Aug. 19, 2013. Applicant further requested a corrected filing receipt, which was entered, but the corrected filing receipt still does not reference No. PCT/CA2014/050789, filed on Aug. 18, 2014, which claims the benefit of Provisional application No. 61/867,598, filed on Aug. 19, 2013.

> It would have been obvious to a person of ordinary skill in the art before the effective filing date of the claimed invention to form the device of Royle with a fluid pump, conduit and fluid nozzle as taught by Remley to allow fluid to be directed through the air and to provide multiple nozzles, *remote control* and a valve for improved steering and propulsion as taught by Puck.

(Non-Final Office Action, September 14, 2020, at p. 2 (emphasis added).)

In response to the rejection, Applicant argued that none of the asserted prior art describes a remote control structure through which the amphibious vehicle can be controlled remotely when the vehicle is on land and when it is in water:

> None of the cited prior art describe a remote control structure configured such that the speed and/or direction of an amphibious vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating. Neither Royle nor Remley disclose remote control by an operator remote from the vehicle. Puck discloses remote control over steering a floating vehicle, but does not disclose or even suggest that the vehicle can be operated on the ground and does not disclose or even suggest remotely operating such a vehicle on the ground.

(Amendment/Response, January 14, 2021, at p. 8 (emphasis in original).) Applicant also amended the application to add application claims 21-34. (Amendment/Response, January 14, 2021, at pp. 4-6.)

In an Examiner interview discussing "[r]emote control of Amphibious [*sic*]," the Examiner agreed that "all the claims except 21-28 are allowable." (Interview Summary, January 19, 2021.) The Examiner also referred to the newly discovered reference, U.S. Patent Application Publication No. 2014/0288763 to Bennett ("Bennett"):

> **Issues Discussed:**
>
> **35 U.S.C. 103**
>
> Remote control of Amphibious discussed. The examiner agreed that all the claims except 21-28 are allowable. New Bennett reference, found and cited.

(Interview Summary, January 19, 2021.)

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On February 1, 2021, the Examiner issued a final office action rejecting application claims 21-28 under 35 U.S.C. 103 as being unpatentable over Royle in view of Remley, Puck, and Bennett ("Final Office Action"). The Examiner specifically found that "Bennett teaches a remote control for land and water (paragraphs 0043, 0121)." (Final Office Action, February 1, 2021, p. 2.) Following an Examiner interview, the Examiner canceled application claims 21-28 through an Examiner's Amendment, and application claims 1-2, 4, 6, 12, 18, 20, and 29-34 received a notice of allowance. (Examiner Interview Summary, January 28, 2021; Notice of Allowance, February 10, 2021.) The '557 patent issued April 13, 2021.

As shown below with respect to Ground 4, because Bennett teaches the remote control of an amphibious vehicle while in operation both on land and in water, the Examiner's allowance of application claims 1-2, 4, 6, 12, 18, 20, and 29-34 was in error. These claims were unpatentable over Puck in view of Bennett by the Examiner's own determination.

Furthermore, as shown below with respect to Grounds 1-3, the substance of Applicant's allowed claims was disclosed in the prior art long before Applicant filed the application that led to the '557 patent. U.S. Patent No. 7,478,817 to Carrier ("Carrier"), both alone and in combination with Puck and U.S. Patent No. 7,833,071 to Gaither ("Gaither"), discloses and teaches all the limitations of claims 1-13 of the '557 patent. Carrier and Gaither were not before the Examiner during prosecution of the '557 patent. All the claims of the '557 patent are therefore unpatentable under AIA 35 U.S.C. §§ 102 & 103.

VI. Statement Pointing Out Each Substantial New Question of Patentability

The prior art patents and printed publications relied upon by Bazooka in this Request raise the following substantial new questions of patentability and proposed grounds of rejection:

Ground 1: Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 102 over U.S. Patent No. 7,478,817 to Carrier.

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Ground 2: Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 over U.S. Patent No. 7,478,817 to Carrier in view of U.S. Patent Application Publication No. 2014/0112093 to Puck.

Ground 3: Claims 8-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 over U.S. Patent No. 7,478,817 to Carrier in view of U.S. Patent Application Publication No. 2014/0112093 to Puck and in further view of U.S. Patent No. 7,833,071 to Gaither.

Ground 4: Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 over U.S. Patent Application Publication No. 2014/0112093 to Puck in view of U.S. Patent Application Publication No. 2014/0288763 to Bennett.

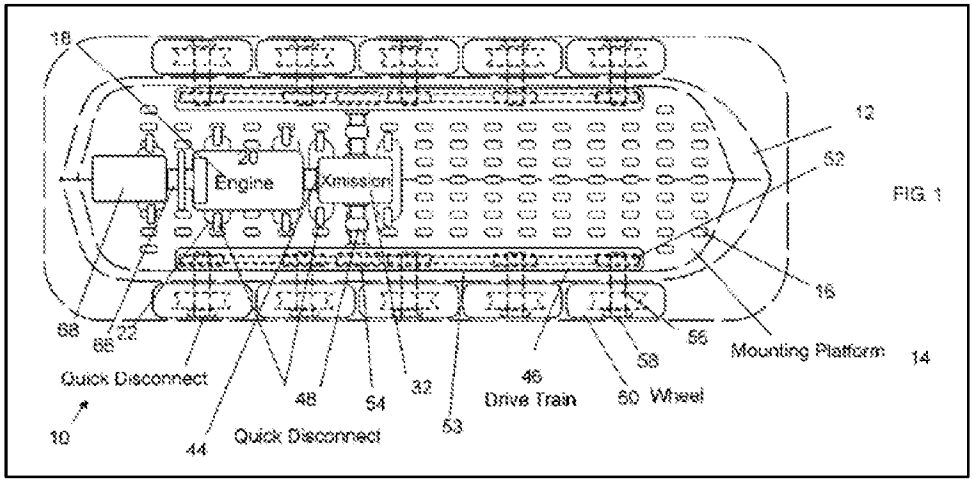
VII. Detailed Explanation of the Relevance and Manner of Applying the Patents to Every Claim for Which Reexamination Is Requested

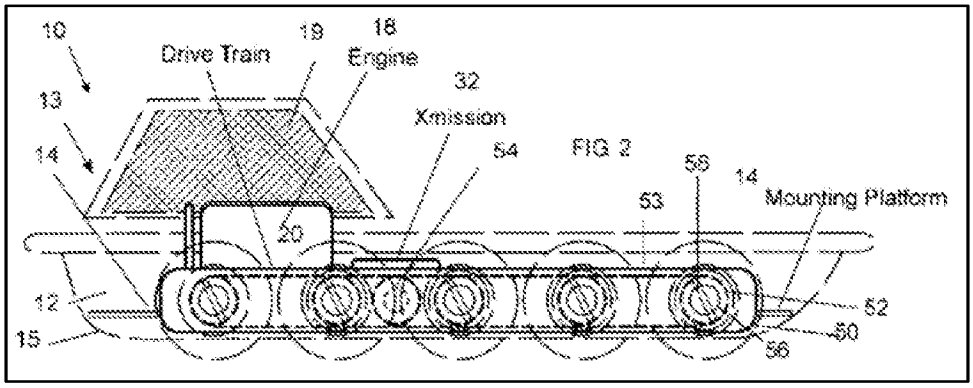
A. Review of U.S. Patent No. 7,478,817 to Carrier

U.S. Patent No. 7,478,817 to Carrier is directed to a "multi-purpose all-terrain vehicle." (Carrier, Col. 1:10-11.) Carrier was filed August 15, 2005 and issued January 20, 2009. The earliest effective priority date asserted for the '557 patent is August 19, 2013. Carrier is prior art under AIA 35 U.S.C. § 102(a). Carrier was not before the Examiner during prosecution of the '557 patent.

Carrier teaches a "manned or unmanned robotic amphibious ground vehicle." (Carrier, Col. 1:66-67.) The amphibious vehicle of Carrier is shown in Figures 1 and 2.

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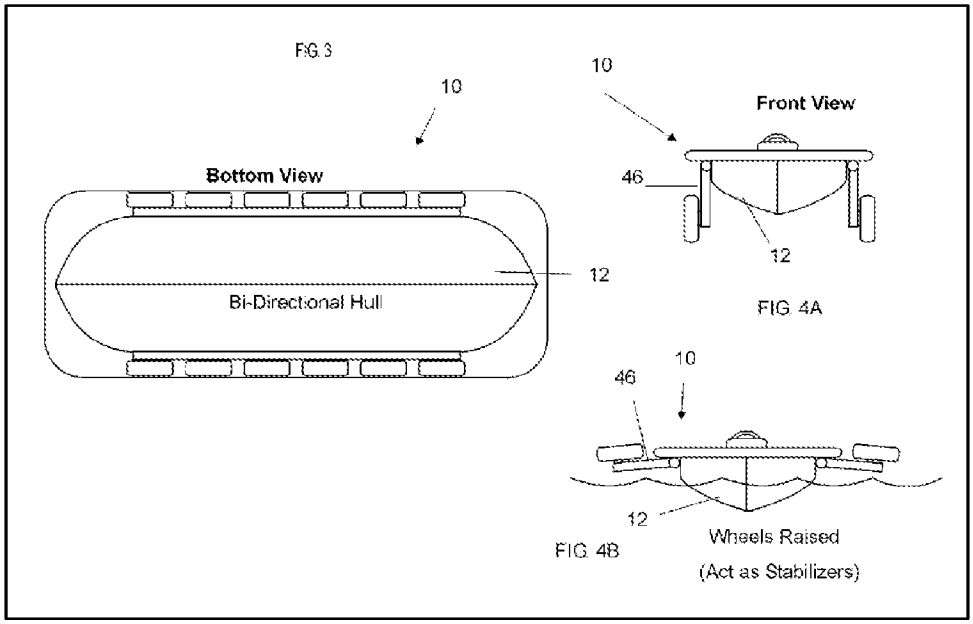
(Carrier, Figs. 1-2.)

Carrier is specifically "equipped for quick exchange of all its functional components . . . ." (Carrier, Col. 2:6-8.) Like the amphibious vehicle disclosed in the '557 patent, the amphibious vehicle of Carrier provides a vehicle that is configured to operate on land and in water, and which is equipped with a fluid pump for pumping fluid directly out of a body of water. (Carrier, Col. 9:18-20 ("If there is a convenient nearby source of water, such as a lake or stream, the water from the available source can be pumped directly by pump"); Col. 10:51-52 ("The use of a pump mounted to the all terrain vehicle which is capable of pumping water from a lake or stream").) The vehicle disclosed in Carrier is adapted to operate on both land and water. (Carrier, Col. 5:61-65 ("[T]he drive train housing 53 can be pivotally mounted to the platform 14, for example so that the same can be actuated between two modes, i.e., a land and a water use, as seen in FIGS. 4A and

4.B").) While Carrier discloses pumping water in connection with fighting fires, it is not limited to this use. Carrier also explains that the amphibious vehicle may pump, for example, water, foam, and decontamination solutions. (Carrier, Col. 5:22-23.)

Like the '557 patent, Carrier explains that the amphibious vehicle includes: a floatable vehicle body; a ground engaging propulsion structure; a fluid pump; a fluid nozzle; a fluid conduit connected to a fluid pump; and a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump. Carrier also discloses the use of remote control to control the amphibious vehicle while it is in operation on land and in water. These structures will be addressed in turn:

Vehicle Body: Like the '557 patent, Carrier teaches that "[t]he all terrain vehicle 10 includes a sealed hull 12 having a platform 14 operably disposed within the hull 12" and that "[t]he hull 12 can be substantially sealably molded for providing buoyancy for water crossings and provide way for necessary functional attachment of units." (Carrier, Col. 3:8-10, 26-28.) Carrier's floatable vehicle body is depicted, for example, in Figures 3, 4A, and 4B.

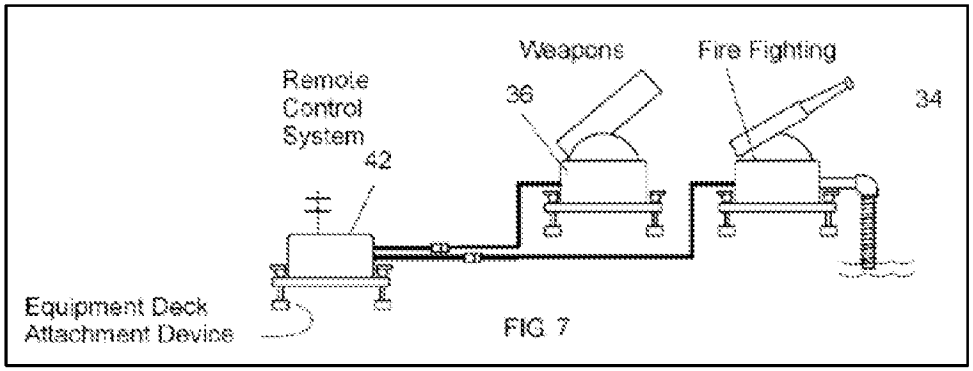


(Carrier, Figs. 3; 4A; 4B.)

Ground Engaging Propulsion Structure: Like the '557 patent, Carrier also teaches a ground engaging propulsion structure. Carrier explains that the ground engaging members may be wheels or tracks. (Carrier, Col. 3:32-38 (wheels); Col. 6:3-6 (tracks).) It also explains that "[t]he vehicle 10 can be direct all wheeled [*sic*] drive (8, 10, or 12 wheeled drive)." (Carrier, Col. 3:32-33.)

Carrier further teaches that the propulsion structure may be driven by hydraulic motors. It explains that "a direct drive system can be employed wherein one or more wheels is driven by . . . a hydrostatic drive transmission or via a hydraulic system as is known in the art." (Carrier, Col. 6:41-44.) Carrier's hydraulic propulsion system allows each wheel to be independently driven at variable speeds: "The drive train can also be configured in such a manner where as one or more wheels can be driven by one or more drive component systems." (Carrier, Col. 7:5-8; *see also* Col. 7:51-54 (disclosing variable speed transmission).)

Fluid Pump: Carrier teaches a fluid pump. (*See* Carrier, Col. 4:14-32 (referencing "fire fighting equipment and pumps" and "pump engines").) The fluid pump of Carrier is depicted, for example, in Figure 7.



(Carrier, Fig. 7.)

Carrier explains that it is "equipped with a pump for providing various pressure and volume outputs to shoot sufficient volumes of water." (Carrier, Col. 8:45-47.) It explains: "The use of a pump mounted to the all terrain vehicle which is capable of pumping water from a lake or stream

onto a fire is another feature of the present invention." (Carrier, Col. 10:51-53.) Carrier explains that the fluid pump is capable of pumping numerous liquids: "The water cannon is capable of flowing water, and or foamed water and or dry chemicals at the same time or independently." (Carrier, Col. 9:26-27; *see also* Col. 10:31-33 ("The water cannon is as well capable to shoot streams of water . . . foam, dry chemical, or decon [decontamination] solutions in any combination.").) Carrier also discloses a filter for filtering out debris that would otherwise clog the pump. (Carrier, Col. 10:64-67 ("a screen to filter out debris that would otherwise clog hoses").)

Fluid Nozzle: Carrier also teaches a fluid nozzle, explaining that when the pump is in operation "water is discharged through a standard e[j]ector jet nozzle attached to the end of hoses." (Carrier, Col. 9:3-4.)

Fluid Conduit: Carrier also explains that the fluid nozzle is connected to the fluid pump by a fluid conduit, *e.g.*, hose: "The hose can be fluidly attached to the pump." (Carrier, Col. 9: 61-62.) Carrier also explains that the nozzle is a separate structure from the fluid conduit:

> If there is a convenient nearby source of water, such as a lake or stream, the water from the available source can be pumped directly by pump into the fire hoses, or the tank at the same time refilling the tank[']s water supply and continuing to supply water to the hoses, water tank and cannon thereby providing a continuous uninterrupted supply or flow of water by removing an end cap from pump and simple valve manipulations feeding water therethrough. The water cannon is capable of flowing water, and or foamed water and or dry chemicals at the same time or independently through a dual chambered water cannon *with the appropriate corresponding nozzle* affixed to each independent chamber[']s output end.

(Carrier, Col. 9:18-30 (emphasis added).)

Power Source: Carrier also discloses a power source that can power the amphibious vehicle and the fluid pump. It explains: "The vehicle 10 includes a self contained (main vehicle drive power plant), engine unit 18, (that can be P-8 compatible, gasoline, diesel, hybrid-electric, propane, natural gas or a combination thereof)." (Carrier, Col. 4:33-36.) The pump can be powered

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by the vehicle's power source: "The unit 34 can be powered by the vehicle engine unit 18." (Carrier, Col. 5:40-42.)

Remote Control: Carrier also discloses a remote control that can control both the vehicle and the pump when the vehicle is in operation on land and in water. Carrier explains: "The operations of *each unit described herein* can be performed by remote control unit 42 which is operably quick connectable to each unit on the vehicle 10 having suitable connections therewith." (Carrier, Col. 11:5-8 (emphasis added).) Carrier teaches that the remote control unit "enable[es] the vehicle 10 to be remotely controlled . . . ." (Carrier, Col. 11:11-12.) Carrier further explains that "[t]he water cannon . . . can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes." (Carrier, Col. 10:31-35.)

B. Review of U.S. Patent Application Publication No. 2014/0112093 to Puck

U.S. Patent Application Publication No. 2014/0112093 to Puck is directed to "[a] floating manure agitator that floats on the surface of a manure lagoon and that may be remotely controlled." (Puck, Abstr.) Puck was filed on December 12, 2011 and published on April 24, 2014. The earliest effective priority date asserted for the '557 patent is August 19, 2013. Puck is prior art under AIA 35 U.S.C. § 102(a). While Puck was before the Examiner during prosecution of the '557 patent, it is proper to re-consider Puck here in light of the substantial new questions of patentability it presents when considered differently than how it was considered by the Examiner during prosecution, as discussed more fully with respect to Grounds 2, 3, and 4 below. *See* 35 U.S.C. § 303(a); MPEP § 2216.

Puck discloses "[a] floating manure agitator that floats on the surface of a manure lagoon and that may be remotely controlled to agitate manure supernatant into a slurry with sludge settling on the bottom of the lagoon." (Puck, Abstr.) Puck explains: "The present invention relates in general to a manure agitator and, more particularly, to a floating manure agitator for use in

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association with a manure lagoon." (Puck, [0001].) It further explains: "In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source." (Puck, [0011].)

The problem identified in Puck is identical to the problem the '557 patent sought to solve, namely, the agitation of manure in manure ponds. Puck identifies the drawbacks of prior art manure agitation methods:

> Prior art methods of agitating the manure include attaching a shaft with a propeller or auger to the power takeoff of a tractor or other farm vehicle resting on the shore. The rotating propeller or auger forces the supernatant down into the sludge, causing the solids within the sludge to move upward into suspension within the supernatant. While this method does place some solids into suspension, the method has several drawbacks. One drawback is that the propeller or auger forces sludge up from the bottom of the lagoon in only a narrow area. While the propeller or auger may be moved to provide a more even distribution of solids within the supernatant, moving the propeller or auger is time consuming.

(Puck, [0004].)

One solution to this problem is to use a vehicle that is lowered into the lagoon, but as Puck explains, existing manure agitation vehicles were not easily mobile or controllable because they were moved with cables by operators on the shore. (Puck, [0006].) Puck explains:

> One drawback associated with such devices is that these devices are not easily maneuverable. Another drawback associated with such prior art devices is the difficulty associated with controlling such devices. Often elaborate systems of wires and securement posts must be erected near the shores of the manure lagoon to provide a guide for the vehicle to move during the agitation process. As the vehicle typically makes several passes across the lagoon, several guide wires and posts must be set up to accommodate multiple passes. The devices can be difficult to steer during passes across the lagoon.

(Puck, [0007].)

Puck's solution is to provide a floating manure agitation boat that is mobile on the surface of a manure pond and that may be controlled via remote control.

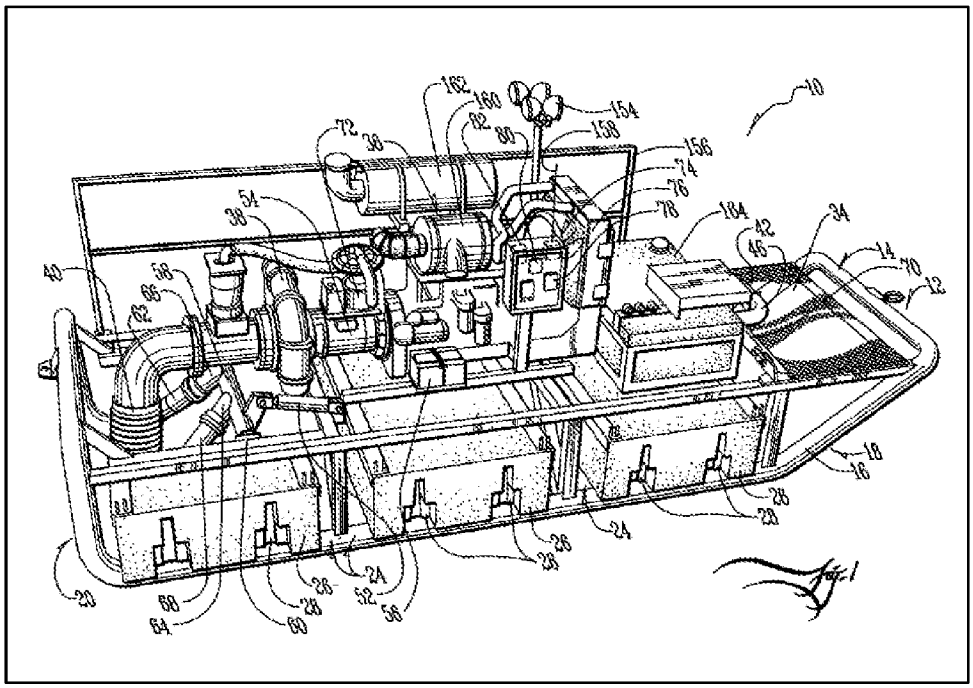
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> It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon . . .
> * * *
> Additionally, it would be desirable to provide a floating manure agitation vehicle that may be remotely controlled and guided to specific portions of the lagoon to move solids of the sludge into suspension with the supernatant as desired.

(Puck, [0008]-[0009].)

Like the '557 patent, Puck discloses a manure agitator comprising a vehicle body, a power source, a fluid pump for pumping liquid manure, and a fluid conduit and fluid nozzle. Puck also discloses controlling the manure agitator via remote control. These structures will be addressed in turn.

Vehicle Body: Like the '557 patent, Puck discloses a floatable vehicle body: "A floating fluid agitator is shown generally as (10) in FIG. 1". (Puck, [0022].) The floatable vehicle body of Puck is shown in Figure 1.



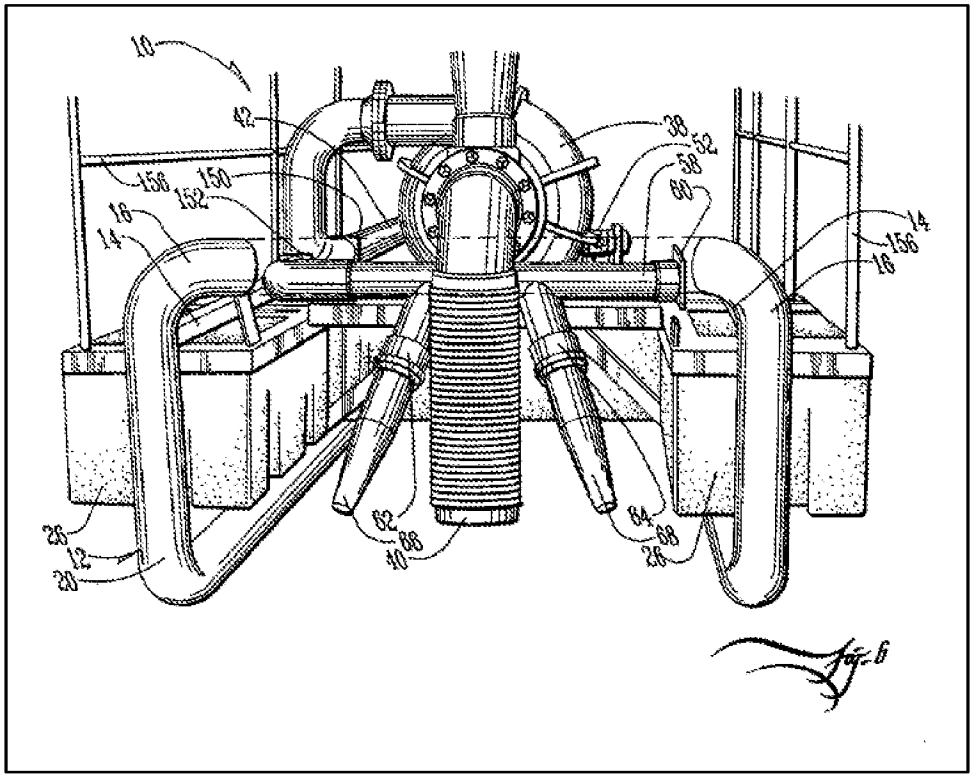
(Puck, Fig. 1.)

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Fluid Pump: Like the '557 patent, Puck further discloses a fluid pump for pumping liquid manure. Puck explains:

> 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).

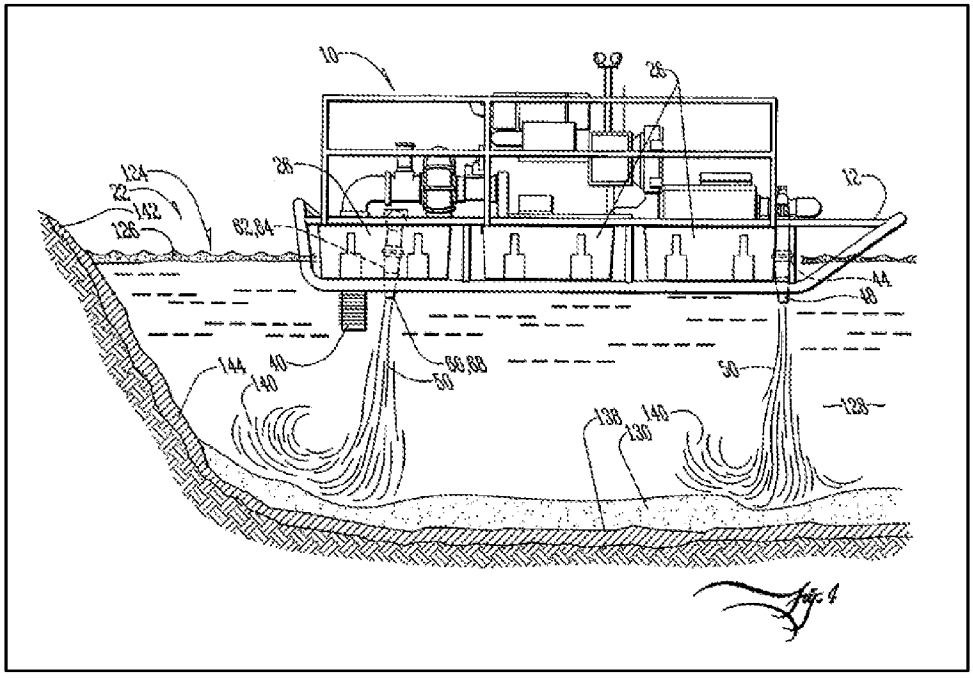
(Puck, [0026]; *see also* [0027].) The fluid pump 38 is depicted in Figure 6.



(Puck, Fig. 6.)

Fluid Nozzle: Puck also discloses a fluid nozzle. As Puck explains, "[r]eleasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12)." (Puck, [0029].) The operation of the fluid nozzles is shown in Figure 4.

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(Puck, Fig. 4.)

Fluid Conduit: Puck explains that the fluid nozzle is connected by a fluid conduit (transport pipe) to the fluid pump. Puck explains:

> 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).

(Puck, [0027].)

Power Source: Puck also discloses a power source (internal combustion engine) to provide power to the fluid pump. Puck explains: "The vessel (12) is provided with a deck (34) and a power source (36). (FIG.1). While the power source (36) may be any suitable power source, in the preferred embodiment the power source (36) is a John Deere Tier 3 diesel engine." (Puck, [0024].) The power source provides power to the fluid pump: "Coupled to the power source (36) is a liquid manure pump such as a slurry pump (38)." (Puck, [0025].)

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Remote Control: Puck also discloses a remote control that allows the agitation vehicle to be controlled from shore: "A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore." (Puck, [0011]; *see also* Puck [0032], [0035], [0037].) Puck specifically included use of a remote control to solve the problems associated with prior art agitation vehicles—the inability to control the vehicle. (*See* Puck, [0009].)

As the Examiner found during prosecution of the '557 patent, the floating manure agitator of Puck was readily combinable with amphibious vehicles. For example, in the Non-Final Office Action, the Examiner rejected various claims under 35 U.S.C. 103 as being unpatentable over Royle in view of Remley and Puck. (*See* Non-Final Office Action, September 14, 2020, at p. 2.) Royle is an amphibious vehicle. (*E.g.*, Royle, Abstr. (disclosing a steerable wheel mechanism "applicable for use in amphibious craft").) In response to this rejection, the Applicant did not challenge the combination of Puck with amphibious vehicles. (*See* Amendment/Response, January 14, 2021, at p. 8.)

While Puck discloses the solution of using a floating manure agitator to agitate manure ponds, Puck does not address the additional problems of exiting a floating vehicle from a manure pond and transporting the floating vehicle between manure ponds. These problems are addressed through the combination of Puck with amphibious pumping vehicles. As detailed more fully with respect to Grounds 2, 3, and 4 below, a person of ordinary skill in the art would have known to combine Puck with various amphibious vehicles, such as the amphibious vehicles disclosed in Carrier, Gaither, and Bennett, to arrive at the invention of the '557 patent.

C. Review of U.S. Patent No. 7,833,071 to Gaither

U.S. Patent No. 7,833,071 to Gaither is directed to "[a]n amphibious, all-terrain vehicle." (Gaither, Abstr.) Gaither was filed June 8, 2007 and issued November 16, 2010. Gaither claims the benefit of Provisional Application No. 60/812,530, which was filed on June 9, 2006. The

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earliest effective priority date asserted for the '557 patent is August 19, 2013. Gaither is prior art under AIA 35 U.S.C. § 102(a). Gaither was not before the Examiner during prosecution of the '557 patent.

Gaither is an amphibious vehicle that is adapted for use on land and in water. (Gaither, Abstr.) The structure of Gaither is shown in Figure 1.

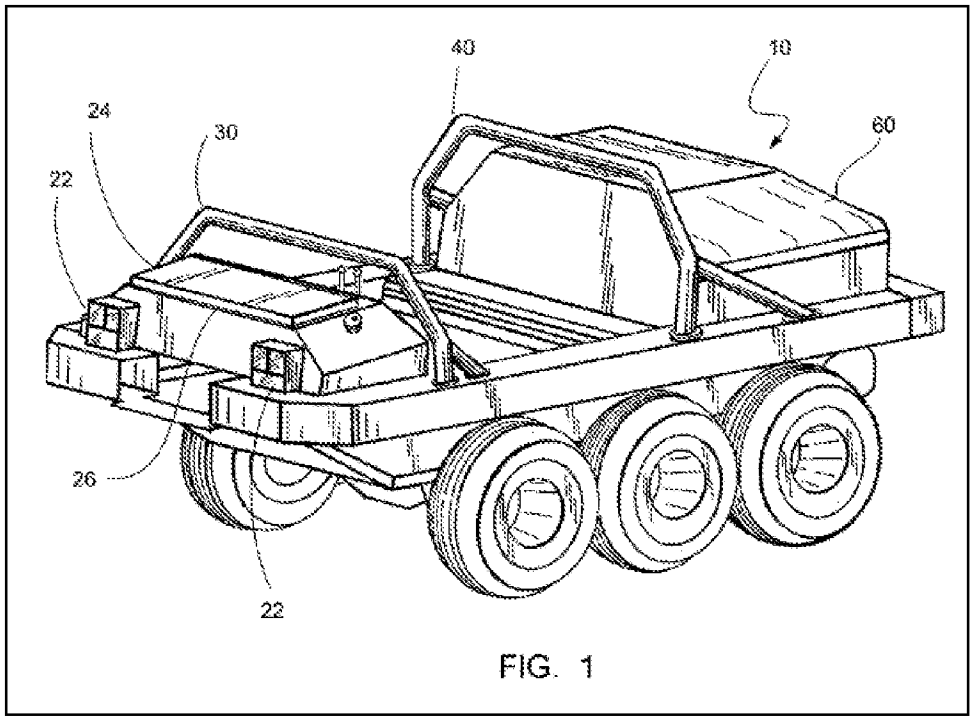


FIG. 1

(Gaither, Fig. 1.)

Like the '557 patent, Gaither discloses a ground-engaging propulsion structure including ground-engaging wheels and a hydraulic drive system. "[T]he invention is an amphibious vehicle that utilizes four, six, or eight independent, hydraulically driven wheels when the wheels are in contact with the ground." (Gaither, Col. 1:22-24.)

The hydraulic propulsion system disclosed by Gaither is strikingly similar to that disclosed in the '557 patent. The amphibious vehicle of Gaither utilizes "a pair of hydrostatic pumps to independently provide power to hydraulic drive mechanisms of the left and right side of the

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vehicle." (Gaither, Abstr.) "The hydraulic drive mechanisms on a side of the vehicle comprise a plurality of hydraulic wheel motors." (Gaither, Abstr.) Gaither explains that "The present invention utilizes four, six, or eight hydraulic wheel motors . . . mounted in pairs on opposite sides of the vehicle." (Gaither, Col. 3:44-46.)

Gaither teaches that each wheel is connected to a hydraulic motor. (Gaither, Col. 7:1-3 ("Undercarriage assembly 200r is comprised of channel assembly 210, access cover 202, *wheel motors 504*, and tires 203.") (emphasis added).) Each wheel is connected to a separate hydraulic motor: "Channel 220 further defines a plurality of wheel motor apertures 232 through which the shaft of each wheel motor 504 passes. One tire 503 is mounted to the shaft of each wheel motor 504." (Gaither, Col. 7:15-18.)

The hydraulic wheel motors are variable speed motors which permit the ground engaging wheels to operate at variable speeds: "The speed of vehicle 10 is controlled by a combination of vehicle control levers 602l and 602r and throttle 630. The further away from their central positions levers 602l and 602r are moved, the greater the output from hydrostatic pump 502 and the faster the propulsion motors will rotate. Throttle 603 . . . preferably provides four different throttle settings: idle, low, medium, and high." (Gaither, Col. 10:19-26.)

The individual hydraulic motors may also move at variable speeds relative to each other, such as when the vehicle is executing a turn. Gaither explains:

> To execute a gradual turn to the right, lever 602l is moved farther forward from its central position than lever 602r, as shown in FIG. 6C, resulting in the engaged propulsion motors on the left side of vehicle 10 rotating at a higher rate than the engaged propulsion motors on the rights side of vehicle 10 causing vehicle 10 to turn. The larger the differential between the positions of levers 602d and 602r, the smaller the radius of the turn.

(Gaither, Col. 10:34-41.)

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Like the '557 patent, Gaither also discloses a floatable vehicle body (Gaither, Col. 4:57-66; Fig. 2) and a power source that is preferably an internal combustion engine (Gaither, Col. 7:31-38).

As detailed more fully with respect to Ground 3 below, when faced with the problem of the '557 patent, namely providing an amphibious pumping vehicle that is capable of operation in a manure pond, a person of ordinary skill in the art would have looked to the teachings of other amphibious vehicles such as Gaither for the specifics of propulsion methods, such as the use of individual hydraulic motors for each wheel to allow for operation at variable speeds.

D. Review of U.S. Patent Application Publication No. 2014/0288763 to Bennett

U.S. Patent Application Publication No. 2014/0288763 to Bennett is directed to "a tracked ATV [all-terrain vehicle]." (Bennett, Abstr.) Bennett was filed on March 25, 2014 and published on September 25, 2014. Bennett claims the benefit of Provisional Application No. 61/805,113, which was filed on March 25, 2013. The earliest effective priority date asserted for the '557 patent is August 19, 2013. Bennett is prior art under AIA 35 U.S.C. § 102(a). While Bennett was before the Examiner during prosecution of the '557 Patent, it is proper to re-consider Bennett here in light of the substantial new questions of patentability it presents when considered differently than how it was considered by the Examiner during prosecution, as discussed more fully with respect to Ground 4 below. *See* 35 U.S.C. § 303(a); MPEP § 2216.

Bennett is an amphibious vehicle that is adapted for use on land and in water. (Bennett, [0043].) The structure of Bennett is seen in Figure 1.

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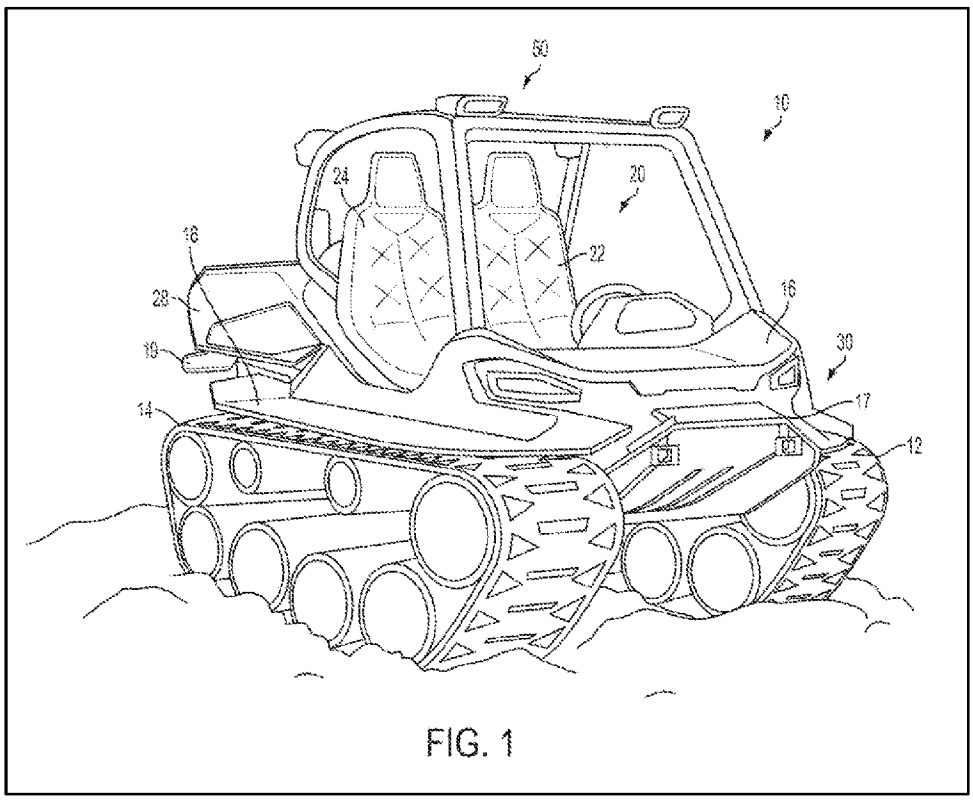


FIG. 1

(Bennett, Fig. 1.)

Relevant here, Bennett discloses a remote control system in which the amphibious vehicle can be remotely controlled while it is on water and while it is on land. Bennett teaches: "[V]ehicle 10 is configured for both land and amphibious operation. Additionally, vehicle 10 may be operated by remote control." (Bennett, [0043].) Bennett is clear that the vehicle may be operated by remote control when in operation in water and on land: "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." (Bennett, [0121].) As the Examiner found when rejecting application claims 21-28, "Bennett teaches a remote control for land and water (paragraphs 0043, 0121)." (Final Office Action, February 1, 2021, at p. 2.)

Like the '557 patent, Bennett also discloses a floatable vehicle body (Bennett, [0043], [0051]); a ground engaging propulsion structure including a hydraulic assembly (Bennett, [0044], [0083], Fig. 1); a fluid pump (Bennett, [0059], [0079]); and a power source (Bennett, [0083]).

A person of ordinary skill in the art would have combined the amphibious vehicle of Bennett with the manure agitation boat of Puck. In fact, the Examiner already applied the combination of Puck and Bennett during prosecution. In the Final Office Action, the Examiner rejected application claims 21-28 under 35 U.S.C. 103 as being unpatentable over Royle in view of Remley, Puck, and Bennett. (*See* Final Office Action, February 1, 2021, p. 2.) Applicant did not challenge this combination of references. (*See* Amendment/Response, January 14, 2021, at p. 8.)

E. Ground 1 (Carrier): Detailed Prior Art Application to Claims 1-13

Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 102 because every limitation of such claims is disclosed in Carrier. The claims are reproduced below, with bolded citations to Carrier indicating where each limitation is taught. A claim chart detailing this ground of invalidity is attached hereto as Exhibit G.

1. *Claim 1*

Carrier discloses all the limitations of Claim 1:

"An amphibious vehicle (**Carrier, Col. 1:10-16, 37-41, Col. 8:16-18**) comprising:

a floatable vehicle body (**Carrier, Col. 2:8-10, Col. 3:26-28; Col. 5:61-65; Figs. 4A, 4B**);

ground engaging propulsion structure (**Carrier, Col. 3:25-38; Col. 4:33-40**);

a fluid pump (**Carrier, Col. 4:14-32; Col. 10:51-56**) for pumping liquid manure;

at least one fluid nozzle (**Carrier, Col. 9:13-30**) connected by a fluid conduit (***id.***) to the fluid pump (**Carrier, Col. 5:19-40**);

a power source (**Carrier, Col. 8:54-63**) connected to a hydraulic pump and configured to provide power to both the ground engaging propulsion structure (**Carrier, Col. 4:33-40; Col.**

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5:40-43; Col. 6:41-54; Col. 6:60 – Col. 7:5) and the fluid pump (**Carrier, Col. 5:19-40, Col. 8:54-59; Col. 9:54-56**); and,

remote control structure (**Carrier, Col. 11:5-16**) configured to control the ground engaging propulsion structure and a flow of fluid from the fluid nozzle (**Carrier, Col. 10: 31-35; 11:47-53**), wherein the speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating (**Carrier, Col. 11:5-16**)."

To the extent it is determined that that Carrier does not disclose a pumping system "for pumping liquid manure," this is a statement of intended use in Claim 1 and not a structural limitation. *See* MPEP § 2114 (manner of operating a device does not differentiate an apparatus claim from the prior art). The functional language "for pumping liquid manure" is simply a statement of intended use under its broadest reasonable interpretation. The title of the '557 patent is "Amphibious Pumping Vehicle," and the "Technical Field" explains that "[t]he invention relates to pumps and vehicles equipped for pumping." ('557 Pat., Col. 1:23-24.) There is nothing in the specification of the '557 patent that suggests that the claimed fluid pump has a special or distinct structure that is required for pumping liquid manure. The '557 patent does not teach that the fluid pump must have a specific structure for pumping liquid manure.

For example, the specification of the '557 patent explains:

> The fluid pump may comprise a pump housing configured for immersion within the fluid. The pump housing may comprise a bottom fluid inlet and at least two tangential fluid outlets. 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.

('557 Pat., Col. 2:65 – Col. 3:5.)

The specification of the '557 patent also provides:

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> The fluid pump 9 comprises a pump housing 18 with three tangential fluid outlets 19 that are combined into a single fluid conduit 20. The single fluid conduit 20 is then split into left side 21 and right side 22 fluid conduits which connect at the front and rear of the vehicle to form a complete circuit. The fluid pump 9 is thus fluidically connected to all fluid nozzles of the vehicle via the fluid conduits 20-22.

('557 Pat., Col. 5:42-48.)

Nothing in the specification of the '557 patent provides that any additional structure would be required for the fluid pump to operate "for pumping liquid manure," which is simply a statement of intended use under the broadest reasonable interpretation of this claim.

When faced with similar functional language, the Federal Circuit has determined that unless the specification provides a specific additional required structure, such statements are simply statements of intended use, not claim limitations. *See In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997) ("Although Schreiber is correct that Harz does not address the use of the disclosed structure to dispense popcorn, the absence of a disclosure relating to function does not defeat the Board's finding of anticipation. 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. . . . A reference may be from an entirely different field of endeavor than that of the claimed invention or may be directed to an entirely different problem from the one addressed by the inventor, yet the reference will still anticipate if it explicitly or inherently discloses every limitation recited in the claims."); *see also Homeland Housewares, LLC v. Whirlpool Corp.*, 865 F.3d 1372, 1379 (Fed. Cir. 2017) (reversing a finding of no anticipation and holding that all claims were anticipated; "That Figure 25 contains all the structural limitations of claim 1, according to the correct construction, completes the anticipation analysis, regardless of intended use."); *Textron Innovations Inc. v. Am. Eurocopter Corp.*, 498 F. App'x 23, 28 (Fed. Cir. 2012) ("In cases in which functional language adds a structural limitation to an apparatus claim, however, it does so because the language describes

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something about the structure of the apparatus rather than merely listing its intended or preferred uses.").

The same holds true for the '557 Patent. The language "for pumping liquid manure" does not describe any specific structure of the fluid pump. It simply provides an intended use. Carrier's disclosure of a fluid pump and associated structure thus meets this limitation.

2. *Claim 2*

Carrier discloses the additional limitations of Claim 2:

"The vehicle according to claim 1, wherein the ground engaging propulsion structure comprises a set of wheels (**Carrier, Col. 3:28-33; Fig. 2**) or an endless track (**Carrier, Col. 6:3-6, 13-16; Fig. 2A**)."

3. *Claim 3*

Carrier discloses the additional limitations of Claim 3:

"The vehicle according to claim 1, wherein the power source is configured to provide hydraulic fluid power to both the ground engaging propulsion structure (**Carrier, Col. 5:40-43; Col. 6:41-54; Col. 6:60 – Col. 7:5**) and the fluid pump (**Carrier, Col. 5:19-40, 40-46, Col. 8:54-58**)."

4. *Claim 4*

Carrier discloses the additional limitations of Claim 4:

"The vehicle according to claim 3, wherein the ground engaging propulsion structure is operable at variable speed by a hydraulic motor (**Carrier, Col. 6:41 – Col. 7:11; Col. 7:46-54**)."

5. *Claim 5*

Carrier discloses the additional limitations of Claim 5:

"The vehicle according to claim 1, wherein the at least one fluid nozzle comprises a plurality of fluid nozzles connected to the fluid conduit (**Carrier, Col. 9:26-30**)."

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6. *Claim 6*

Carrier discloses the additional limitations of Claim 6:

"The vehicle according to claim 1, wherein the location of the ground engaging propulsion structure, power source and fluid pump are selected to provide a desired location for a center of gravity of the vehicle (**Carrier, Col. 4:14-32; Col. 9:43-53**)."

To the extent it is determined that Carrier does not disclose selecting the ground engaging propulsion structure, power source, and fluid pump to maintain a center of gravity, such disclosure is inherent. Carrier specifically teaches that a center of gravity must be maintained and that the location of physical features affect the center of gravity: "Again, it is important for the fluid not to shift, since the center of gravity of vehicle 10' would shift with the fluid, which would in turn increase the chance of vehicle 10' overturning." (Carrier, Col. 9:43-53.) Figure 4B of Carrier shows the amphibious vehicle of Carrier floating in an orientation that is substantially parallel to the water. (Carrier, Fig. 4B.) Such symmetrical floatation shows that the elements of Carrier have been selected to maintain a center of gravity. This center of gravity is also shown, for example, in Figure 1 of Carrier, in which the ground engaging propulsion structure (wheels) are arranged symmetrically around the edges of the amphibious vehicle, and the power source (engine) is positioned directly on the center line. (Carrier, Figure 1.)

Furthermore, during prosecution, the Examiner rejected application claim 18, which became issued Claim 6, because the center of gravity was inherent. (Non-final Office Action, September 14, 2020, at pp. 2-3 ("With respect to claim 18 [which became issued claim 6], the center of gravity is inherent in the combination."). Applicant did not challenge the Examiner's inherency finding. (*See* Amendment/Response, January 14, 2021, at p. 8.)

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Based on the teaching of Carrier, a person of ordinary skill in the art at the time of the invention would necessarily select the location of the ground engaging propulsion structure, power source, and fluid pump to maintain a desired location for a center of gravity.

7. *Claim 7*

Carrier discloses the additional limitations of Claim 7:

"The vehicle according to claim 1, wherein the amount of fluid flow from the at least one fluid nozzle and/or the direction of the at least one fluid nozzle are remotely controllable by the operator remote from the vehicle when the vehicle is floating (**Carrier, Col. 10:2-5; Col. 11:47-53**)."

8. *Claim 8*

Carrier discloses all the limitations of Claim 8:

"An amphibious vehicle (**Carrier, Col. 1:10-16, 37-41, Col. 8:16-18**) comprising:

a floatable vehicle body (**Carrier, Col. 2:8-10, Col. 3:26-28; Col. 5:61-65; Figs. 4A, 4B**);

four hydraulically powered ground engaging wheels (**Carrier, Col. 3:25-38; Col. 6:41-46; Fig. 2**);

four hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels (**Carrier, Col. 6:41 – Col. 7:11**);

a fluid pump (**Carrier, Col. 4:14-32; Col. 10:51-56**) for pumping liquid manure;

at least one directionally adjustable nozzle (**Carrier, Col. 5:19-40; Col. 9:13-30**) through which the liquid manure is pumped;

an internal combustion engine (**Carrier, Col. 5:47-65; Col. 8:4-8**) configured to provide power to both the four variable speed hydraulic motors (**Carrier, Col. 5:40-43; Col. 6:41 – Col. 7:11**) and the fluid pump (**Carrier, Col. 5:19-40, 40-46; Col. 8:54-58**);

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the location of the four hydraulically powered ground engaging wheels, the internal combustion engine and the fluid pump selected to provide a desired location for a center of gravity of the vehicle (**Carrier, Col. 4:14-32; Col. 9:43-53**); and,

remote control structure (**Carrier, Col. 11:5-16**) configured to control the four variable speed hydraulic motors and the fluid pump (**Carrier, Col. 11:47-53**), wherein the speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating (**Carrier, Col. 11:5-16**)."

As discussed with respect to Claim 1 above, to the extent it is determined that that Carrier does not disclose a pumping system "for pumping liquid manure," or a directionally adjustable nozzle "through which the liquid manure is pumped," these are statements of intended use and not structural limitations. *See In re Schreiber*, 128 F.3d at 1477; *see also Homeland Housewares*, 865 F.3d at 1379; *Textron Innovations*, 498 F. App'x at 28. Carrier's disclosure of a fluid pump is therefore sufficient.

Likewise, for the same reasons shown with respect to Claim 6 above, to the extent it is determined that Carrier does not specifically disclose selecting the location of the ground engaging propulsion structure, power source, and fluid pump to maintain a center of gravity, such disclosure is inherent because Carrier specifically teaches that a center of gravity must be maintained, and that the location of physical features affect that center of gravity. (Carrier, Col. 9:43-53.)

9. *Claim 9*

Carrier discloses the additional limitations of Claim 9:

"The vehicle according to claim 8, wherein the power source is configured to provide hydraulic fluid power to the four hydraulic motors and the fluid pump (**Carrier, Col. 6:41 – Col. 7:11; Col. 9:61 – Col. 10:13**)."

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10. *Claim 10*

Carrier discloses the additional limitations of Claim 10:

"The vehicle according to claim 9, wherein the four hydraulic motors are variable speed hydraulic motors and wherein the four hydraulically powered ground engaging wheels are each operable at variable speed (**Carrier, Col. 7:12-27; 46-54**)."

11. *Claim 11*

Carrier discloses the additional limitations of Claim 11:

"The vehicle according to claim 8, wherein the at least one directionally adjustable nozzle is connected to a fluid conduit connected to the fluid pump (**Carrier, Col. 9:13-30**)."

12. *Claim 12*

Carrier discloses the additional limitations of Claim 12:

"The vehicle according to claim 11, wherein a plurality of nozzles comprising the at least one directionally adjustable nozzle is connected to the fluid conduit (**Carrier, Col. 5:19-40; Col. 9:13-30; Col. 10:2-5**)."

13. *Claim 13*

Carrier discloses the additional limitations of Claim 13:

"The vehicle according to claim 8, wherein the amount of fluid flow from the directionally adjustable nozzle and/or the direction of the directionally adjustable nozzle are remotely controllable by the operator remote from the vehicle when the vehicle is floating (**Carrier, Col. 10:2-5; Col. 11:5-16, 47-53**)."

F. Ground 2 (Carrier in view of Puck): Detailed Prior Art Application to Claims 1-13

Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 because such claims would have been obvious to one of ordinary skill in the art at the time of the invention over

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Carrier in view of Puck. A claim chart detailing this ground of invalidity is attached hereto as Exhibit H.

As discussed with respect to Ground 1 above, Carrier discloses all limitations of Claims 1-13 of the '557 patent. The combination of Carrier and Puck is presented in the alternative. To the extent it is determined that Carrier does not disclose a fluid pump for pumping liquid manure, and this statement of intended use is determined to be a required structural limitation, it is disclosed by Puck, which is especially adapted for pumping liquid manure. The "technical field" for the '557 patent is "pumps and vehicles equipped for pumping." ('557 Pat., Col. 1:23-24.) It further specifies that "[i]n particular, the invention relates to manure pumps and amphibious vehicles equipped for pumping liquid manure." ('557 Pat., Col. 1:24-26.) A person of ordinary skill in the art at the time of the invention would have looked to the teachings of Carrier and Puck when attempting to solve the problem addressed by the '557 patent, namely, the use of a pumping vehicle in connection with the agitation of manure ponds.

Carrier, a multi-purpose amphibious pumping vehicle, and Puck, a floating manure agitator, are analogous art to the '557 patent. Here, both Carrier and Puck are analogous art under either prong of *In re Bigio*. These references are in the same field of endeavor as the invention of the '557 patent and they are reasonably pertinent to the problem addressed by the invention of the '557 patent. The Examiner cited Puck during prosecution, which also demonstrates that it is analogous art. (*See* Non-Final Office Action, September 14, 2020, at p. 2.) The Examiner also cited other amphibious vehicles such as Royle during prosecution. Applicant did not challenge Puck or amphibious vehicles as analogous art, nor did Applicant challenge the motivation of a person of ordinary skill in the art to combine Puck with amphibious vehicles. (*See* Amendment/Response, January 14, 2021, at p. 8.)

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A person of ordinary skill in the art at the time of the invention would have been motivated to combine the amphibious vehicle of Carrier with the floating manure agitator of Puck based on the teachings in the field of amphibious vehicles and manure agitation vehicles. One of ordinary skill, considering the teachings of Carrier, would have recognized the value of including the features of Puck. Specifically, one of ordinary skill looking to adapt the amphibious pumping vehicle of Carrier for use to agitate manure lagoons would have naturally looked to the teachings of other vehicles, such as Puck, that are adapted for pumping liquid manure. One of ordinary skill looking to adapt the manure agitation boat of Puck to permit easier exit from a manure pond, and easier transportation between manure ponds, would have looked to the teachings of amphibious vehicles such as Carrier, which were already adapted for use in water and on land. Prior art may be considered in a variety of ways under *KSR*. Most notably, given the similarity of the references, Examination Guideline rationales (C), "Use of known techniques to improve similar devices (methods, or products) in the same way" and (D) "Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results," appear most relevant.

During prosecution, the Examiner found that other amphibious vehicles in combination with Puck "combine[] known features to achieve predictable results." (Non-Final Rejection, September 14, 2020 at pp. 2-3.) The Applicant did not challenge this combination. (*See* Amendment/Response, January 14, 2021, at p. 8.) The same reasoning applies with equal force to the combination of the amphibious vehicle of Carrier with Puck. The combination of the amphibious pumping vehicle of Carrier with the fluid pump of Puck for pumping liquid manure according to known methods would yield the predictable result of an amphibious pumping vehicle that is capable of pumping liquid manure.

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1. *Claim 1*

As discussed in Ground 1 above, Carrier discloses all limitations of Claim 1. However, to the extent it is determined that Carrier does not disclose a fluid pump "for pumping liquid manure," and this statement is determined to be a required structural limitation, it is disclosed by Puck. Faced with the problem of agitating liquid manure in a manure lagoon, it would have been obvious to one skilled in the art to use a pump for pumping the liquid manure in connection with an amphibious pumping vehicle.

Puck disclosed the use of a fluid pump for pumping liquid manure before the effective filing date of the '557 patent. Puck is a "manure agitator for use in association with a manure lagoon." (Puck, [0001].) Puck teaches a fluid pump for pumping liquid manure: "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)." (Puck, [0027]; *see also* [0026].)

Puck's description of the advantages of using a pumping system for pumping liquid manure is strikingly similar to the advantages described in the '557 patent. Puck provides:

> It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant, while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air.

(Puck, [0008].)

To that end, like Carrier, Puck also discloses the following limitations of Claim 1: a floatable vehicle body (Puck, Abstr., [0001], [0011], [0022], Fig. 1); a fluid pump for pumping

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liquid manure (Puck, [0026], [0027]); at least one fluid nozzle connected by a fluid conduit to the fluid pump (Puck, [0027], [0028], [0029], Figs. 4-6); and a power source configured to provide power to the fluid pump (Puck, [0024], [0025]). As discussed above with respect to Ground 1, Carrier discloses the remaining limitations of Claim 1. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the amphibious pumping vehicle of Carrier with the manure agitator of Puck to create the invention of Claim 1.

2. *Claims 2-4*

As shown with respect to Ground 1 above, Carrier discloses all the limitations of Claims 2-4. The addition of Puck is not necessary to meet all limitations of these claims.

3. *Claims 5-7*

As shown with respect to Ground 1 above, Carrier discloses all the limitations of Claims 5-7. However, the combination of Carrier and Puck is presented in the alternative to the extent it is determined that Carrier does not disclose all limitations of these claims.

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 5, Puck discloses at least one fluid nozzle comprising a plurality of fluid nozzles connected to the fluid conduit. (Puck, [0008], [0027], [0029], Figs. 4-6.)

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 6, Puck discloses positioning the fluid pump to provide a desired location for a center of gravity of the vehicle. (Puck, [0041].) Figure 4 of Puck shows the boat of Puck floating in an orientation that is substantially parallel to the water. (Puck, Fig. 4.) Such symmetrical floatation shows that the elements of Puck have been selected to maintain a center of gravity. Furthermore, during prosecution, the Examiner rejected application claim 18, which became issued Claim 6, because the center of gravity was inherent. (Non-final Office Action, September 14, 2020, at pp. 2-3 ("With respect to claim 18 [which became issued claim 6], the center of gravity is inherent in

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the combination."). Applicant did not challenge the Examiner's inherency finding. (*See* Amendment/Response, January 14, 2021, at p. 8.) Based on the teaching of Puck, a person of ordinary skill in the art at the time of the invention would necessarily select the location of the ground engaging propulsion structure, power source, and fluid pump to maintain a desired location for a center of gravity.

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 7, Puck discloses remotely controlling the amount of fluid flow from the at least one fluid nozzle and/or the direction of the at least one fluid nozzle by the operator remote from the vehicle when the vehicle is floating. (Puck, [0032], [0033], [0035], [0037], Fig. 7.)

4. *Claim 8*

Carrier discloses every limitation of Claim 8 as discussed with respect to Ground 1 above. To the extent it is determined that Carrier does not disclose a fluid pump "for pumping liquid manure," or a directionally adjustable nozzle "through which the liquid manure is pumped," and these statements are determined to be required structural limitations, they are disclosed by Puck. (Puck, [0008], [0026], [0027].) Faced with the problem of agitating liquid manure in a manure lagoon, it would have been obvious to one skilled in the art to use a pump for pumping the liquid manure in connection with an amphibious pumping vehicle, and a directionally adjustable nozzle "through which the liquid manure is pumped." (*See* Puck, [0026], [0027].) Additionally, to the extent it is determined that Carrier does not disclose positioning the fluid pump to provide a desired location for a center of gravity of the vehicle, Puck discloses this limitation. (Puck, [0041].) To the extent it is determined that Puck does not disclose the limitations of Claim 8, the disclosure of a desired center of gravity is inherent in the combination. (*See* Non-final Rejection, September 14, 2020, at pp. 2-3 ("With respect to claim 18 [which became issued claim 6], the center of gravity is inherent in the combination.").

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Like Carrier, Puck also discloses the following limitations of Claim 8: a floatable vehicle body (Puck, Abstr., [0001], [0011], [0022], Fig. 1); a fluid pump for pumping liquid manure (Puck, [0026], [0027]); at least one directionally adjustable nozzle through which the liquid manure is pumped (Puck, [0011], [0027], [0032], [0035], [0037], Figs. 4-6); an internal combustion engine configured to provide power to the fluid pump (Puck, [0024], [0025], Claim 13); and the location of the fluid pump selected to provide a desired location for a center of gravity of the vehicle (Puck, [0041]). For the same reasons as discussed above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the amphibious pumping vehicle of Carrier with the manure agitator of Puck to create the invention of Claim 8.

5. *Claims 9-10*

As shown with respect to Ground 1 above, Carrier discloses all the limitations of Claims 9-10. The addition of Puck is not necessary to meet all limitations of these claims.

6. *Claims 11-13.*

As shown with respect to Ground 1 above, Carrier discloses all the limitations of Claims 11-13. However, the combination of Carrier and Puck is presented in the alternative to the extent it is determined that Carrier does not disclose all limitations of these claims.

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 11, Puck discloses at least one directionally adjustable nozzle connected to a fluid conduit that is connected to the fluid pump. (Puck, [0008], [0026], [0027], Figs. 4-6.)

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 12, Puck discloses a plurality of nozzles comprising the at least one directionally adjustable nozzle that is connected to the fluid conduit. (Puck, [0008], [0026], [0027], Figs. 4-6.)

To the extent it is determined that Carrier does not disclose the additional limitations of Claim 13, Puck discloses remotely controlling the amount of fluid flow from the directionally

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adjustable nozzle and/or the direction of the directionally adjustable nozzle by the operator remote from the vehicle when the vehicle is floating. (Puck, [0033], [0037], Fig. 7.)

G. Ground 3 (Carrier in view of Puck and in further view of Gaither): Detailed Prior Art Application to Claims 8-13

Claims 8-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 because such claims would have been obvious to one of ordinary skill in the art at the time of the invention over Carrier in view of Puck and in further view of Gaither. A claim chart detailing this ground of invalidity is attached hereto as Exhibit I.

As shown above in Ground 2, Carrier and Puck disclose every limitation of claims 8-13. However, to the extent it is determined that Carrier does not disclose four variable speed hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels at variable speed, Gaither is presented in the alternative. Gaither discloses four variable speed hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels at variable speed.

Like Carrier, Gaither is an all-terrain amphibious vehicle configured for use on land and in water. Gaither discloses the use of four ground-engaging wheels, each powered by a separate hydraulic motor. (Gaither, Col. 1:22-25 ("the invention is an amphibious vehicle that utilizes four, six, or eight independent, hydraulically driven wheels when the wheels are in contact with the ground"); *see also* Col. 3:21-24.) Gaither teaches that each wheel is connected to a separate hydraulic motor. (Gaither, Col. 7:1-3 ("Undercarriage assembly 200r is comprised of channel assembly 210, access cover 202, *wheel motors 504*, and tires 203.") (emphasis added); Col. 7:15-18 ("Channel 220 further defines a plurality of wheel motor apertures 232 through which the shaft of each wheel motor 504 passes. One tire 503 is mounted to the shaft of each wheel motor 504.").)

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The hydraulic wheel motors are variable speed motors which permit the ground engaging wheels to operate at variable speeds. (Gaither, Col. 10:19-26 ("The further away from their central positions levers 602l and 602r are moved, the greater the output from hydrostatic pump 502 and the faster the propulsion motors will rotate. Throttle 603 . . . preferably provides four different throttle settings: idle, low, medium, and high.").) The individual hydraulic motors may also move at variable speeds relative to each other, such as when the vehicle is executing a turn. (Gaither, Col. 10:34-39.)

One of ordinary skill in the art would have combined the amphibious vehicles of Carrier and Gaither with the Puck's teaching of a pumping vehicle for agitating liquid manure to arrive at the invention of the '557 patent. Like Carrier, Gaither is an amphibious vehicle. It is analogous art under either prong of *In re Bigio* because it is in the same field of endeavor as the invention of the '557 patent and is reasonably pertinent to the problem addressed by the invention of the '557 patent. The Examiner cited other amphibious vehicles such as Royle during prosecution. (*See* Non-Final Office Action, September 14, 2020, at p. 2.) Applicant did not challenge amphibious vehicles as analogous art. (*See* Amendment/Response, January 14, 2021, at p. 8.)

A person of ordinary skill in the art at the time of the invention would have been motivated to combine the amphibious vehicles of Carrier and Gaither with the manure agitator of Puck based on the teachings in the field of amphibious vehicles and manure agitation vehicles. Carrier specifically explains that hydraulic propulsion systems for amphibious vehicles are known in the art. (Carrier, Col. 6:41-44 ("[A] direct drive system can be employed wherein one or more wheels is driven by . . . a hydrostatic drive transmission ***or via a hydraulic system as is known in the art***.") (emphasis added).) In view of Carrier's express instruction, one of ordinary skill looking to adapt the hydraulic propulsion system of the amphibious pumping vehicle of Carrier for use with

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the manure agitator of Puck would have naturally looked to the teachings of other amphibious vehicles, such as Gaither, that disclose similar hydraulic propulsion systems. Prior art may be considered in a variety of ways under *KSR*. Most notably, given the similarity of the references, Examination Guideline rationales (C), "Use of known techniques to improve similar devices (methods, or products) in the same way" and (D) "Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results," appear most relevant.

During prosecution, the Examiner found that other amphibious vehicles in combination with Puck "combine[] known features to achieve predictable results." (September 14, 2020 non-final rejection at pp. 2-3.) The Applicant did not challenge this combination. (*See* Amendment/Response, January 14, 2021, at p. 8.) The same reasoning applies with equal force to the combination of the amphibious vehicle of Carrier and Gaither with Puck. The combination the amphibious pumping vehicle of Carrier and the hydraulic propulsion system of Gaither with the fluid pump of Puck with according to known methods would yield the predictable result of an amphibious pumping vehicle that is capable of pumping liquid manure.

1. *Claim 8*

To the extent it is found that the combination of Carrier and Puck does not disclose "four hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels" as required by Claim 8, this limitation is disclosed by Gaither. Gaither discloses four hydraulic motors, one hydraulic motor per wheel, for powering four hydraulically powered ground engaging wheels. (Gaither, Col. 1:22-25; Col. 3:21-24; Col. 7:1-3, 15-18; *see also* Col. 7:30 – Col. 9:31.)

2. *Claim 10*

To the extent it is found that the combination of Carrier and Puck does not disclose the following limitation, "wherein the four hydraulic motors are variable speed hydraulic motors and

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wherein the four hydraulically powered ground engaging wheels are each operable at variable speed" as required by Claim 10, this limitation is disclosed by Gaither. Gaither discloses that the four hydraulic motors are variable speed hydraulic motors such that the four hydraulically powered wheels are each operable at variable speed. (Gaither, Col. 10:19-26, 34-39; *see also* Col. 10:18-50.)

3. *Claims 9, 11-13*

As shown with respect to Ground 2 above, the combination of Carrier and Puck discloses all the limitations of Claims 9 and 11-13. The addition of Gaither is not necessary to meet all limitations of these claims.

H. Ground 4 (Puck in view of Bennett): Detailed Prior Art Application to Claims 1-13

Claims 1-13 of the '557 patent are unpatentable under AIA 35 U.S.C. § 103 because such claims would have been obvious to one of ordinary skill in the art at the time of the invention over Puck in view of Bennett. A claim chart detailing this ground of invalidity is attached hereto as Exhibit J.

While both Puck and Bennett were before the Examiner during prosecution of the '557 patent, the Examiner did not consider the full scope of these references. *See* 35 U.S.C. § 303(a) ("[T]he existence of a substantial new question of patentability is not precluded by the fact that a patent or printed publication was previously cited by or to the Office or considered by the Office."); MPEP § 2216 ("The substantial new question of patentability may be based on art previously considered by the Office if the reference is presented in a new light or a different way that escaped review during earlier examination."); *see also Ex parte Rozman*, 2021 Pat. App. LEXIS 4649, at *5-6. Specifically, the Examiner did not consider the application of Bennett's remote control system and associated elements to the disclosure of Puck.

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The Examiner's Non-Final Office Action rejected various application claims under 35 U.S.C. 103 as being unpatentable over Royle in view of Remley and Puck. (*See* Non-Final Office Action, September 14, 2020, at p. 2.) In response, Applicant argued that Puck does not disclose a remote-control structure through which the vehicle can be controlled when the vehicle is on land and when it is in water: "Puck discloses remote control over steering a floating vehicle, but does not disclose or even suggest that the vehicle can be operated on the ground and does not disclose or even suggest remotely operating such a vehicle on the ground." (Amendment/Response, January 14, 2021, at p. 8.)

In an Examiner interview discussing "[r]emote control of Amphibious [*sic*]," the Examiner agreed that "all the claims except 21-28 are allowable." (Interview Summary, January 19, 2021.) However, the Examiner issued a final office action rejecting application claims 21-28 under 35 U.S.C. § 103 as being unpatentable over Royle in view of Remley, Puck and Bennett. The Examiner specifically found that "Bennett teaches a remote control for land and water (paragraphs 0043, 0121)." (Final Office Action, February 1, 2021, p. 2.) Following an Examiner interview, the Examiner canceled application claims 21-28 through an Examiner's Amendment, and application claims 1-2, 4, 6, 12, 18, 20, and 29-34 received a notice of allowance. (Examiner Interview Summary, January 28, 2021; Notice of Allowance, February 10, 2021.) The allowed claims became issued Claims 1-13.

It is apparent from the statements made during prosecution that Claims 1-13 were allowed due to the alleged lack of a remote control limitation in the prior art through which the amphibious vehicle can be remotely controlled while in water and on land. However, this same limitation is found in Bennett, as the Examiner specifically acknowledged in rejecting application claims 21-

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28. When properly applied, the combination of Puck and Bennett discloses all limitations of Claims 1-13. The further consideration of Royle and Remley is, therefore, not necessary.

The Examiner specifically found that one of ordinary skill in the art would have had a motivation to combine Puck and Bennett, and that such combination "combines known features to achieve predictable results." (Final Office Action, February 1, 2021, pp. 2-3.) Applicant did not challenge that combination or challenge Puck or Bennett as analogous art. Even without relying on the Examiner's prior determination, a person of ordinary skill in the art at the time of the invention would have looked to the teachings of Puck and Bennett when attempting to solve the problem addressed by the '557 patent, namely, the use of an amphibious pumping vehicle in connection with the agitation of manure ponds. Puck, a floating manure agitator, and Bennett, an amphibious vehicle, and are analogous art to the '557 patent. Here, both Puck and Bennett are analogous art under either prong of *In re Bigio*. These references are in the same field of endeavor as the invention of the '557 patent and they are reasonably pertinent to the problem addressed by the invention of the '557 patent.

A person of ordinary skill in the art at the time of the invention would have been motivated to combine the floating manure agitator of Puck with the amphibious vehicle of Bennett based on the teachings in the field of amphibious vehicles and manure agitation vehicles. One of ordinary skill, considering the teachings of Puck, would have recognized the value of including the features of Bennett. One of ordinary skill looking to adapt the manure agitation boat of Puck to permit easier exit from a manure pond, and easier transportation between manure ponds, would have looked to the teachings of amphibious vehicles such as Bennett, which were already adapted for use in water and on land. Prior art may be considered in a variety of different ways under *KSR*. Most notably, given the similarity of the references, Examination Guideline rationales (C), "Use

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of known techniques to improve similar devices (methods, or products) in the same way" and (D) "Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results," appear most relevant.

As discussed above, the Examiner determined that the combination of Puck and Bennett "combines known features to achieve predictable results." (Final Office Action, February 1, 2021, pp. 2-3.) The combination of the fluid pump and associated structure of Puck with the amphibious vehicle of Bennett according to known methods would yield the predictable result of an amphibious pumping vehicle that is capable of pumping liquid manure. The Examiner applied the combination of Puck and Bennett during prosecution, and the Applicant did not challenge this combination.

The combination of Puck and Bennett discloses every limitation of Claims 1-13. The claims are reproduced below, with bolded citations to Puck and Bennett indicating where each limitation is taught.

1. *Claim 1*

The combination of Puck and Bennett discloses all the limitations of Claim 1:

"An amphibious vehicle (**Bennett, [0043]**) comprising:

a floatable vehicle body (**Puck, Abstr., [0001], [0011], [0022]; Bennett, [0043], [0051]**);

ground engaging propulsion structure (**Bennett, [0044], [0083]; Fig. 1**);

a fluid pump for pumping liquid manure (**Puck, [0026], [0027]; Bennett, [0059], [0079]**);

at least one fluid nozzle connected by a fluid conduit to the fluid pump (**Puck, [0027], [0028], [0029], Fig. 4-6**);

a power source connected to a hydraulic pump and configured to provide power to both the ground engaging propulsion structure and the fluid pump (**Bennett, [0083]**); and,

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remote control structure configured to control the ground engaging propulsion structure and a flow of fluid from the fluid nozzle, wherein the speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating (**Bennett, [0043], [0121]**)."

2. *Claim 2*

Bennett discloses the additional limitations of Claim 2:

"The vehicle according to claim 1, wherein the ground engaging propulsion structure comprises a set of wheels or an endless track (**Bennett, [0043]**)."

3. *Claim 3*

Bennett discloses the additional limitations of Claim 3:

"The vehicle according to claim 1, wherein the power source is configured to provide hydraulic fluid power to both the ground engaging propulsion structure and the fluid pump (**Bennett, [0083]**)."

4. *Claim 4*

Bennett discloses the additional limitations of Claim 4:

"The vehicle according to claim 3, wherein the ground engaging propulsion structure is operable at variable speed by a hydraulic motor (**Bennett, [0083], [0084]**)."

5. *Claim 5*

Puck discloses the additional limitations of Claim 5:

"The vehicle according to claim 1, wherein the at least one fluid nozzle comprises a plurality of fluid nozzles connected to the fluid conduit (**Puck, [0008], [0027], [0029]**)."

6. *Claim 6*

Puck discloses the additional limitations of Claim 6:

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"The vehicle according to claim 1, wherein the location of the ground engaging propulsion structure, power source and fluid pump are selected to provide a desired location for a center of gravity of the vehicle (**Puck, [0041]**)."

To the extent it is determined that Puck does not disclose the limitations of Claim 6, the disclosure of a desired center of gravity is inherent in the combination. Figure 4 of Puck shows the boat of Puck floating in an orientation that is substantially parallel to the water. (Puck, Fig. 4.) Such symmetrical floatation shows that the elements of Puck have been selected to maintain a center of gravity. Furthermore, during prosecution, the Examiner rejected application claim 18, which became issued Claim 6, because the center of gravity was inherent. (Non-final Office Action, September 14, 2020, at pp. 2-3 ("With respect to claim 18 [which became issued claim 6], the center of gravity is inherent in the combination."). Applicant did not challenge the Examiner's inherency finding. (*See* Amendment/Response, January 14, 2021, at p. 8.) Based on the teaching of Puck, a person of ordinary skill in the art at the time of the invention would necessarily select the location of the ground engaging propulsion structure, power source, and fluid pump to maintain a desired location for a center of gravity.

7. *Claim 7*

Puck discloses the additional limitations of Claim 7:

"The vehicle according to claim 1, wherein the amount of fluid flow from the at least one fluid nozzle and/or the direction of the at least one fluid nozzle are remotely controllable by the operator remote from the vehicle when the vehicle is floating. (**Puck, [0032], [0033], [0035], [0037]**)."

8. *Claim 8*

The combination of Puck and Bennett discloses all the limitations of Claim 8:

"An amphibious vehicle (**Bennett, [0043]**) comprising:

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a floatable vehicle body (**Puck, Abstr., [0001], [0011]; Bennett, [0043], [0051]**);

four hydraulically powered ground engaging wheels (**Bennett, [0003], [0062], [0063], [0064], [0083], Fig. 8, 9A, 9B**);

four hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels (**Bennett, [0083], [0107]**);

a fluid pump for pumping liquid manure (**Puck, [0026], [0027]; Bennett, [0059], [0079]**);

at least one directionally adjustable nozzle through which the liquid manure is pumped (**Puck, [0011], [0027], [0032], [0035], Figs. 4-6**);

an internal combustion engine configured to provide power to both the four variable speed hydraulic motors and the fluid pump (**Puck, [0024], [0025], Claim 13; Bennett, [0083], [0084], [0085]**);

the location of the four hydraulically powered ground engaging wheels, the internal combustion engine and the fluid pump selected to provide a desired location for a center of gravity of the vehicle (**Puck, [0041]**); and,

remote control structure configured to control the four variable speed hydraulic motors and the fluid pump, wherein the speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating (**Bennett, [0043], [0121]**)."

To the extent that it is determined that Bennett does not disclose four ground-engaging wheels, such determination is incorrect. While the disclosure of Bennett is primarily directed to a tracked ATV, Bennett also discloses prior art ATVs including ground-engaging members that may be tires. (Bennett, [0003] ("ATVs and UVs include *ground-engaging members, which may be tires*, tracks skis, or any other device for moving the vehicle across the ground.") (emphasis added).)

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Additionally, Bennett "expressly" incorporates by reference "the complete disclosure" of U.S. Patent Application Publication No. 2013/0033070 to Kinsman et al. ("Kinsman"), attached hereto as Exhibit K. (Bennett, [0057].) Kinsman discloses a utility vehicle with four ground-engaging wheels. (Kinsman, [0120] ("With reference to FIG. 1, the utility vehicle is shown generally at 2 to include a frame 4 supported by a plurality of ground engaging members, for example front wheels 6 and rear wheels 8."); Fig. 1.) Through incorporation, therefore, Bennett also discloses four ground engaging wheels. Additionally, the use of hydraulically driven, ground-engaging wheels is well-known in the art. (*See, e.g.*, Carrier, Col. 6:41-46; Gaither, Col. 1:21-25.) The use of four ground-engaging wheels would have been obvious to one of ordinary skill in the art at the time of the invention.

To the extent it is determined that Bennett does not disclose four variable speed hydraulic motors, one per wheel, such disclosure is inherent. Bennett discloses the use of two variable speed hydraulic motors, one for each set of tracks. (Bennett, [0083], [0084], [0085].) Accordingly, the use of four motors, one per wheel, would have been obvious to one of ordinary skill in the art at the time of the invention.

To the extent it is determined that Puck does not disclose a desired center of gravity, such disclosure is inherent, as discussed with respect to Claim 6 above.

9. *Claim 9*

Puck and Bennett disclose the additional limitations of Claim 9:

"The vehicle according to claim 8, wherein the power source is configured to provide hydraulic fluid power to the four hydraulic motors and the fluid pump (**Puck, [0027], [0031]; Bennett, [0083]**)."

Puck discloses a hydraulic fluid pump. (Puck, [0027], [0031].) Bennett discloses a power source configured to provide hydraulic fluid power to hydraulic motors. (Bennett, [0083].) The

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use of a power source to provide hydraulic fluid power to hydraulic motors and fluid pump would have been obvious to one of ordinary skill in the art at the time of the invention.

10. *Claim 10*

Bennett discloses the additional limitations of Claim 10:

"The vehicle according to claim 9, wherein the four hydraulic motors are variable speed hydraulic motors (**Bennett, [0083], [0084], [0085]**) and wherein the four hydraulically powered ground engaging wheels are each operable at variable speed (**Bennett, [0003]; [0057], [0059], [107]**)."

Bennett discloses variable speed hydraulic motors to operate the tracks at variable speed. (Bennett, [0083], [0084], [0085].) Bennett also discloses four ground engaging wheels. (Bennett, [0003]; [0057] (incorporating disclosure of Kinsman by reference); Kinsman, [0120].) The use of variable speed hydraulic motors to power ground engaging wheels would have been obvious to one of ordinary skill in the art at the time of the invention.

11. *Claim 11*

Puck discloses the additional limitations of Claim 11:

"The vehicle according to claim 8, wherein the at least one directionally adjustable nozzle is connected to a fluid conduit connected to the fluid pump (**Puck, [008], [0026], [0027], [0029], Figs. 4-6**)."

12. *Claim 12*

Puck discloses the additional limitations of Claim 12:

"The vehicle according to claim 11, wherein a plurality of nozzles comprising the at least one directionally adjustable nozzle is connected to the fluid conduit (**Puck, [008], [0026], [0027], [0029], [0035]**)."

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13. *Claim 13*

Puck discloses the additional limitations of Claim 13:

"The vehicle according to claim 8, wherein the amount of fluid flow from the directionally adjustable nozzle and/or the direction of the directionally adjustable nozzle are remotely controllable by the operator remote from the vehicle when the vehicle is floating (**Puck, [0035]**)."

VIII. Conclusion

The prior art relied upon in this Request raises substantial new questions of patentability as to claims 1-13 of the '557 patent. The prior art relied upon in this Request supports the various anticipation and obviousness rejections of claims 1-13 as set forth above. All the requirements for *ex parte* reexamination and a rejection of the specified claims have been met. It is respectfully requested that the PTO order such reexamination and find that claims 1-13 of the '557 patent are unpatentable.

Respectfully submitted,

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Bazooka v. Nuhn - IPR2024-00098
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EXHIBIT F

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6

CONFIRMATION NO. 2912

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PUBLICATION NOTICE



Title:AMPHIBIOUS PUMPING VEHICLE

Publication No.US-2022-0176762-A1
Publication Date:06/09/2022

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently https://portal.uspto.gov/pair/PublicPair. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

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APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Nuhn Industries Ltd., Sebringville, CANADA;

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Document Code:WFEE

User :C46472

Refund Accounting Date:05/17/2022

Effective Date	Sale Item Reference Number	Refund Total
05/09/2022	17590125	$680.00

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method	Account Number
I20225GC29381547	2801	RCE- 1ST REQUEST	$680.00		**********1005

United States Patent and Trademark Office
Office of the Chief Financial Officer

Document Code:WFEE

User :C46472

Sale Adjustment Accounting Date:05/17/2022

Effective Date	Sale Accounting Date	Sale Item Reference Number
05/09/2022	05/17/2022	17590125

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20225GC29381547	2801	RCE- 1ST REQUEST	$680.00	

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6	2912

59115 7590 05/17/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER
AVILA, STEPHEN P

ART UNIT	PAPER NUMBER
3617	

NOTIFICATION DATE	DELIVERY MODE
05/17/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@brunetco.com

Corrected ***Notice of Allowability***	**Application No.** 17/590,125	**Applicant(s)** Nuhn, Ian	
	Examiner STEPHEN AVILA	**Art Unit** 3617	**AIA (FITF) Status** Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the IDS filed 5/9/22.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-21 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/STEPHEN P AVILA/
Primary Examiner, Art Unit 3617

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17590125
Filing Date	2022-02-01
First Named Inventor	Ian Nuhn
Art Unit	3617
Examiner Name	Stephen P. Avila
Attorney Docket Number	NUN-0007-US6

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7478817	B1	2009-01-20	Carrier	Whole document.
	2	7833071	B2	2010-11-16	Gaither	Whole document.

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17590125
Filing Date	2022-02-01
First Named Inventor	Ian Nuhn
Art Unit	3617
Examiner Name	Stephen P. Avila
Attorney Docket Number	NUN-0007-US6

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Arguments in the Request for Ex Parte Patent Reexamination dated May 6, 2022 on U.S. patent US 10,974,557.	
	2	Claim charts in the Request for Ex Parte Patent Reexamination dated May 6, 2022 on U.S. patent US 10,974,557.	

If you wish to add additional non-patent literature document citation information please click the Add button [Add]

EXAMINER SIGNATURE

Examiner Signature	/STEPHEN P AVILA/	Date Considered	05/10/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A./

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17590125
Filing Date	2022-02-01
First Named Inventor	Ian Nuhn
Art Unit	3617
Examiner Name	Stephen P. Avila
Attorney Docket Number	NUN-0007-US6

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A.H. Brunet/	Date (YYYY-MM-DD)	2022-05-09
Name/Print	Robert A.H. Brunet	Registration Number	55158

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 115 of 1211

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

United States Patent and Trademark Office

Office of the Chief Financial Officer

Document Code:WFEE

User :95174

Sale Accounting Date:05/10/2022

Sale Item Reference Number	Effective Date
17590125	05/09/2022

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I202250D36104158	2806	SUBMISSION- INFORMATION DISCLOSURE STMT	$130.00	Deposit Account

Doc Code: QPIDS.REQ
Document Description: QuickPath Information Disclosure Statement

PTO/SB/09 (09-18)

CERTIFICATION AND REQUEST FOR CONSIDERATION OF AN INFORMATION DISCLOSURE STATEMENT FILED AFTER PAYMENT OF THE ISSUE FEE UNDER THE QPIDS PROGRAM

Non-Provisional Application Number: 17590125	Filing Date: 2022-02-01
First Named Inventor: Ian Nuhn	Title of Invention: Amphibious Pumping Vehicle

THE UNDERSIGNED HEREBY CERTIFIES AND REQUESTS THE FOLLOWING FOR THE ABOVE-IDENTIFIED APPLICATION.

1. Consideration is requested of the information disclosure statement (IDS) submitted herewith, which is being filed after payment of the issue fee.
2. Check the box next to the appropriate selection:

   ☐ Each item of information contained in the IDS was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the IDS. See 37 CFR 1.97(e)(1).

   OR

   ☑ No item of information contained in the IDS was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the IDS was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the IDS. See 37 CFR 1.97(e)(2).

   OR

   ☐ See attached certification statement in compliance with 37 CFR 1.97(e).
3. Please charge the IDS fee set forth in 37 CFR 1.17(p) to Deposit Account No. 603973.
4. A Petition to Withdraw from Issue After Payment of the Issue Fee (37 CFR 1.313(c)(2)), including the petition fee set forth in 37 CFR 1.17(h), is submitted herewith as a **Web-based ePetition**. **WARNING:** Do not submit the petition as a follow-on paper via EFS-Web. Submit the petition as a Web-based ePetition by signing on to EFS-Web as a registered user, selecting the radio button next to "Existing application/patent," and then selecting the radio button next to "ePetition (for automatic processing and immediate grant, if all petitions requirements are met)." Failure to use the Web-based ePetition interface will result in automatic entry of the RCE.
5. A request for continued examination (RCE) under 37 CFR 1.114 and the RCE fee under 37 CFR 1.17(e) are submitted herewith.
6. The RCE will be treated as a "conditional" RCE. In the event the examiner determines that any item of information contained in the IDS necessitates the reopening of prosecution in the application, the undersigned understands that (i) the RCE will be processed and treated as an RCE under 37 CFR 1.114 and therefore (ii) the IDS fee under 37 CFR 1.17(p) will be returned in accordance with 37 CFR 1.97(b)(4). In the event that no item of information in the IDS necessitates reopening prosecution, the undersigned understands that the RCE will not be processed and the RCE fee under 37 CFR 1.17(e) will be returned.
7. This certification and request is being filed as a **Web-based ePetition** and is not accompanied by an amendment to the application. Inclusion of an amendment will result in automatic entry of the RCE.

Signature /Robert A.H. Brunet/	Date 2022-05-09
Name (Print/Typed) Robert A.H. Brunet	Practitioner Registration Number (If applicable) 55158

Note: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below.**

☐ *Total of _____ forms are submitted.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17590125
Filing Date	2022-02-01
First Named Inventor	Ian Nuhn
Art Unit	3617
Examiner Name	Stephen P. Avila
Attorney Docket Number	NUN-0007-US6

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7478817	B1	2009-01-20	Carrier	Whole document.
	2	7833071	B2	2010-11-16	Gaither	Whole document.

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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If you wish to add additional U.S. Published Application citation information please click the Add button. Add

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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NON-PATENT LITERATURE DOCUMENTS Remove

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17590125
	Filing Date	2022-02-01
	First Named Inventor	Ian Nuhn
	Art Unit	3617
	Examiner Name	Stephen P. Avila
	Attorney Docket Number	NUN-0007-US6

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Arguments in the Request for Ex Parte Patent Reexamination dated May 6, 2022 on U.S. patent US 10,974,557.	
	2	Claim charts in the Request for Ex Parte Patent Reexamination dated May 6, 2022 on U.S. patent US 10,974,557.	

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17590125
	Filing Date	2022-02-01
	First Named Inventor	Ian Nuhn
	Art Unit	3617
	Examiner Name	Stephen P. Avila
	Attorney Docket Number	NUN-0007-US6

CERTIFICATION STATEMENT

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That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

☒ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A.H. Brunet/	Date (YYYY-MM-DD)	2022-05-09
Name/Print	Robert A.H. Brunet	Registration Number	55158

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	17590125
Filing Date:	01-Feb-2022
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Filer:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE-37CFR 1.17(H) (GROUP II)	2464	1	70	70
RCE- 1ST REQUEST	2801	1	680	680
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**750**

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : May 9, 2022

In re Application of :

Ian Nuhn

DECISION ON PETITION
UNDER CFR 1.313(c)(2)

Application No : 17590125

Filed : 01-Feb-2022

Attorney Docket No : NUN-0007-US6

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed May 9, 2022 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 3617 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt

EFS ID:	45669652
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Robert A.H. Brunet
Filer Authorized By:	
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	09-MAY-2022
Filing Date:	01-FEB-2022
Time Stamp:	18:50:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$750
RAM confirmation Number	E202259I50380976
Deposit Account	603973
Authorized User	Robert Brunet

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.16 (National application filing, search, and examination fees)

37 CFR 1.17 (Patent application and reexamination processing fees)

37 CFR 1.19 (Document supply fees)

37 CFR 1.20 (Post Issuance fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	ePetition Request Form	petition-request.pdf	39833 1242879648920c7d70a5420b678d95f9afe43880	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	2022-05-09-QPID-Form.pdf	172172 704de4e3acfcce27f40e6174427b530ca957a1d3	no	1
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	2022-05-09-RCE.pdf	1679257 71635e320193cf538fcbd241e7ca0d2ccb7bf2ab	no	3
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	2022-05-09-IDS2-US6.pdf	1263421 8d07241d6b012c8135aab8a2d7ad51eda1a67750	no	4
Warnings:					
Information:					
5	Non Patent Literature	2022-05-06-ArgumentsInReexamOnUS4.pdf	1456664 5953f2c5d8198df632e8e21a654587546a2569ac	no	64
Warnings:					
Information:					
6	Non Patent Literature	2022-05-06-ClaimChartsInReexamOnUS4.pdf	3763067 29af0e69f53da99de682e3895a32df254b2c63d6	no	163
Warnings:					
Information:					

7	Fee Worksheet (SB06)	fee-info.pdf	40096 3ebcadd3fe39adc68b70405de0b99ba042915bc0	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	8414510

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	17590125
Filing Date	01-Feb-2022
First Named Inventor	Ian Nuhn
Art Unit	3617
Examiner Name	
Attorney Docket Number	NUN-0007-US6
Title	AMPHIBIOUS PUMPING VEHICLE

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

◉	Small Entity
○	Micro Entity
○	Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Robert Brunet/
Name	Robert Brunet
Registration Number	55158

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
17590125	01-Feb-2022	Ian Nuhn	NUN-0007-US6	2912

TITLE OF INVENTION :

AMPHIBIOUS PUMPING VEHICLE

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Small	Utility under 35 USC 111(a)	3617	012540	

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$600	$0	$600	22-Jul-2022	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
59115 BRUNET & CO. LTD. 401 Bay St. Suite 1600 Toronto ON M5H 2Y4 CANADA 519-474-0700 patents@brunetco.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

◉ Applicant asserting small entity status. See 37 CFR 1.27.
Note: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

○ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

☒ Issue Fee

☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

☐ Publication Fee

☐ The Director is hereby authorized to apply my previously paid issue fee to the current fee due and to charge deficient fees to Deposit Account Number _____

☐ Advance Order - # of copies _____

☐ If **in addition to** the payment of the issue fee amount submitted with this form, there are any discrepancies in any amount(s) due, the Director is authorized to charge any deficiency, or credit any overpayment, to Deposit Account Number _____ . The **issue fee must be submitted** with this form. **If payment of the issue fee does not accompany this form, checking this box and providing a deposit account number will NOT be effective to satisfy full payment of the fee(s) due.**

4.Firm and/or Attorney Names To Be Printed

NOTE: If no name is listed, no name will be printed
For printing on the patent front page, list to be displayed as entered

1. BRUNET & CO. LTD.
2. ROBERT BRUNET
3. HANS KOENIG

5.Assignee Name(s) and Residence Data To Be Printed

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

Name	City	State	Country	Category
Nuhn Industries Ltd.	Sebringville		CANADA	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Robert A. H. Brunet/	**Date**	04-22-2022
Name	Robert A. H. Brunet	**Registration Number**	55158

Electronic Patent Application Fee Transmittal

Application Number:	17590125
Filing Date:	01-Feb-2022
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Filer:	Robert A.H. Brunet/Stephanie Janssens
Attorney Docket Number:	NUN-0007-US6

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	2501	1	600	600
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**600**

Electronic Acknowledgement Receipt

EFS ID:	45540731
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Robert A.H. Brunet/Stephanie Janssens
Filer Authorized By:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	22-APR-2022
Filing Date:	01-FEB-2022
Time Stamp:	15:02:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$600
RAM confirmation Number	E20224LF01581494
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Web85b.pdf	62503 ab0cdf2f8a062e867736fcadebdb797a234928d4	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	40010 ba579cf5b20434724ea3e439e08df0e3baa5c780	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	102513		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

59115 7590 04/22/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER
AVILA, STEPHEN P

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 04/22/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6	2912

TITLE OF INVENTION: AMPHIBIOUS PUMPING VEHICLE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/22/2022

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

59115 7590 04/22/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6	2912

TITLE OF INVENTION: AMPHIBIOUS PUMPING VEHICLE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	07/22/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
AVILA, STEPHEN P	3617	440-012540

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required) ❑ Advance Order - # of Copies _____

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6	2912

59115 7590 04/22/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER	
AVILA, STEPHEN P	

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 04/22/2022

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/590,125	Applicant(s) Nuhn, Ian	
	Examiner STEPHEN AVILA	Art Unit 3617	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to the application filed 2/1/22.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-21 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/STEPHEN P AVILA/
Primary Examiner, Art Unit 3617

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Reasons for Allowance

2. The following is an examiner's statement of reasons for allowance: The claims are allowable by including in an amphibious vehicle with a floatable vehicle body, ground engaging propulsion structure with a plurality of ground engaging elements powered by a hydraulic motor, a fluid pump for pumping liquid manure, a power source for connected to a hydraulic pump, the power source configured to provide to both the ground engaging propulsion structure and the fluid pump, and the last paragraph of claim 1 with the specific details of a wireless remote control.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN AVILA whose telephone number is (571)272-6678. The examiner can normally be reached Mon-Thu 6-4.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is

encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samuel J. Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

STEPHEN AVILA
Primary Examiner
Art Unit 3617

/STEPHEN P AVILA/
Primary Examiner, Art Unit 3617

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	**Art Unit**
	STEPHEN AVILA	3617

CPC - Searched*		
Symbol	**Date**	**Examiner**
B60F3/0061,00,0007.003.0038	04/11/2022	/sa/
B60F 2301/00	04/11/2022	/sa/
B63H 25/02	04/11/2022	/sa/
B63H 2025/028	04/11/2022	/sa/
A01C 3/026	04/11/2022	/sa/
A01C 23/045	04/11/2022	/sa/
F04D 13/02	04/11/2022	/sa/

CPC Combination Sets - Searched*		
Symbol	**Date**	**Examiner**

US Classification - Searched*			
Class	**Subclass**	**Date**	**Examiner**

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	**Date**	**Examiner**
inventor name search in palm	04/11/2022	/sa/
pe2e interference, see search history	04/11/2022	/sa/
checked all related applications	04/11/2022	/sa/

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 144 of 1211

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

Interference Search			
US Class/CPC Symbol	**US Subclass/CPC Group**	**Date**	**Examiner**
B60F	3/00,0061,0007,003,0038	04/11/2022	/sa/
B60F	2301/00	04/11/2022	/sa/
A01C	3/026	04/11/2022	/sa/
A01C	23/045	04/11/2022	/sa/
B63H	25/02	04/11/2022	/sa/
B63H	2025/028	04/11/2022	/sa/
F04D	13/02	04/11/2022	/sa/

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 145 of 1211

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

CLAIMS

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/11/2022								
	1	=								
	2	=								
	3	=								
	4	=								
	5	=								
	6	=								
	7	=								
	8	=								
	9	=								
	10	=								
	11	=								
	12	=								
	13	=								
	14	=								
	15	=								
	16	=								
	17	=								
	18	=								
	19	=								
	20	=								
	21	=								

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 146 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	**Art Unit**
	STEPHEN AVILA	3617

CPC						
Symbol					**Type**	**Version**
B60F	/	3	/	0061	F	2013-01-01
A01C	/	23	/	045	I	2013-01-01
A01C	/	3	/	026	I	2013-01-01
B60F	/	3	/	0007	I	2013-01-01
B60F	/	3	/	0038	I	2013-01-01
B60F	/	3	/	003	I	2013-01-01
B63H	/	25	/	02	I	2013-01-01
F04D	/	13	/	02	I	2013-01-01
B60F	/	2301	/	00	A	2013-01-01
B63H	/	2025	/	028	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	21	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	11 April 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20220411

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 147 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	**Art Unit**
	STEPHEN AVILA	3617

INTERNATIONAL CLASSIFICATION					
CLAIMED					
B60F	/	3	/	00	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	21	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	11 April 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20220411

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 148 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/590,125	Nuhn, Ian
	Examiner	**Art Unit**
	STEPHEN AVILA	3617

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☑ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		10		19										
	2		11		20										
	3		12		21										
	4		13												
	5		14												
	6		15												
	7		16												
	8		17												
	9		18												

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	21	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	11 April 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office

Part of Paper No.: 20220411

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 149 of 1211

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	NUHN, Ian
Art Unit	
Examiner Name	
Attorney Docket Number	NUN-0007-US6

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code1	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4594006	A	1986-06-10	Depeault	
	2	4406413	A	1983-09-27	Houle	
	3	5176098	A	1993-01-05	Royle	
	4	3384047	A	1968-05-21	Remley	
	5	1943152	A	1934-01-09	Weiss	
	6	2586218	A	1952-02-19	Gazda	
	7	9462741	B2	2016-10-11	Puck	
	8	9572297	B2	2017-02-21	Puck	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US6

	9	10118138	B2	2018-11-06	Tews	
	10	8256692	B2	2012-09-04	Knowles	

If you wish to add additional U.S. Patent citation information please click the Add button.

U.S.PATENT APPLICATION PUBLICATIONS

Examiner Initial*	Cite No	Publication Number	Kind Code1	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20130145980	A1	2013-06-13	Puck	
	2	20140112093	A1	2014-04-24	Puck	
	3	20100144220	A1	2010-06-10	Bailey	
	4	20150258868	A1	2015-09-17	Visscher	
	5	20140288763	A1	2014-09-25	Bennett et al.	
	6	20180343786	A1	2018-12-06	Svenby et al.	
	7	20140312156	A1	2014-10-23	Minino et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US6

FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2002619	CA	A1	1991-05-09	Depeault		☐
	2	3431345	DE	A1	1986-03-06	Lullmann		☒
	3	2364962	DE	A1	1975-07-03	Kronseder		☒
	4	2008/038029	WO	A2	2008-04-03	Gibbs Technologies Limited	page 5 line 28 to page 6 line 24, Figs. 4-7	☐

If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International Search Report and Written Opinion, PCT/CA2014/050789, dated 2014-11-05.	☐
	2	Translation of Chinese Office Action dated March 2, 2017 on CN 201480053275.	☐
	3	Translation of Chinese Office Action dated November 6, 2017 on CN 201480053275.	☐
	4	Office Action dated August 23, 2018 on EA 201690422-31.	☒

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US6

	5	Office action dated January 5, 2017 on USSN 15/044,905.	☐
	6	Office action dated August 23, 2017 on USSN 15/586,493.	☐
	7	Office action dated December 15, 2017 on USSN 15/586,493.	☐
	8	Office action dated November 21, 2019 on USSN 16/157,950.	☐
	9	Office action dated September 14, 2020 on USSN 16/891,627.	☐
	10	Office action dated February 1, 2021 on USSN 16/891,627.	☐

If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature	/STEPHEN P AVILA/	Date Considered	04/11/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US6

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A.H. Brunet/	Date (YYYY-MM-DD)	2022-02-01
Name/Print	Robert A.H. Brunet	Registration Number	55158

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

Privacy Act Statement

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /S.P.A/

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	8109	B60F3/0061,00,0007,003,0038.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 06:16 AM
L2	1683	A01C3/026.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 07:42 AM
L3	683	A01C23/045.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 08:07 AM
L4	2997	B63H25/02.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 08:22 AM
L5	951	B63H2025/028.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 09:01 AM
L6	3344	F04D13/02.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/04/11 09:14 AM
L7	265	B60F2301/00.cpc.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD,	OR	ON	ON	2022/04/11 09:54 AM

			DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L8	17	("10118138" OR "1943152" OR "20100144220" OR "20130145980" OR "20140112093" OR "20140288763" OR "20140312156" OR "20150258868" OR "20180343786" OR "2586218" OR "3384047" OR "4406413" OR "4594006" OR "5176098" OR "8256692" OR "9462741" OR "9572297").pn.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 09:56 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	985	B60F3/0061,00,0007,003,0038.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 07:29 AM
N2	106	A01C3/026.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 07:59 AM
N3	42	A01C23/045.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 08:19 AM
N4	738	B63H25/02.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 08:52 AM
N5	220	B63H2025/028.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 09:11 AM
N6	486	F04D13/02.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 09:41 AM
N7	40	B60F2301/00.cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2022/04/11 09:57 AM

Bibliographic Data

Application No: 17/590,125

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /STEPHEN P AVILA/ Examiner's Signature | Initials

Title: AMPHIBIOUS PUMPING VEHICLE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
02/01/2022	440	3617	NUN-0007-US6
RULE			

APPLICANTS

Nuhn Industries Ltd., Sebringville, CANADA

INVENTORS

Ian Nuhn, Sebringville, CANADA

CONTINUING DATA

This application is a CON of 17201100 03/15/2021

17201100 is a CON of 16891627 06/03/2020 PAT 10974557

16891627 is a CON of 16157950 10/11/2018 PAT 10710422

16157950 is a CON of 15586493 05/04/2017 PAT 10124638

15586493 is a CON of 15044905 02/16/2016 PAT 9694636

15044905 is a CON of PCT/CA2014/050789 08/18/2014

PCT/CA2014/050789 has PRO of 61867598 08/19/2013

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

02/07/2022

**** SMALL ENTITY ****

STATE OR COUNTRY

CANADA

ADDRESS

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

FILING FEE RECEIVED

$3,000

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6	2912

59115 7590 04/07/2022

BRUNET & CO. LTD.
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CANADA

EXAMINER
CENTRAL, DOCKET

ART UNIT	PAPER NUMBER
OPAP	

NOTIFICATION DATE	DELIVERY MODE
04/07/2022	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@brunetco.com

Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 17/590,125	**Applicant(s)** Nuhn, Ian	
	Examiner Dale A Hall	**Art Unit** OPET	**AIA (FITF) Status** Yes

1. THE REQUEST FILED 01 February 2022 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☑ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination**. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to Dale Hall at (571)272-3586. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/Dale A. Hall/ Paralegal Specialist, OPET	

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/25 PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION AND TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	17590125
Filing Date	01-Feb-2022
First Named Inventor	Ian Nuhn
Attorney Docket Number	NUN-0007-US6
Title of Invention	AMPHIBIOUS PUMPING VEHICLE

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
Nuhn Industries Ltd.	100 %

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

17201100 filed on 03/15/2021

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

10974557

10710422

10124638

9694636

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:
- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicants claims the following fee status:

◉ Small Entity

○ Micro Entity

○ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further 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 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 55158

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/Robert A. H. Brunet/
Name	Robert A. H. Brunet

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	17590125
Filing Date:	01-Feb-2022
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Filer:	Robert A.H. Brunet/Stephanie Janssens
Attorney Docket Number:	NUN-0007-US6

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**170**

Doc Code: DISQ.E.FILE
Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 17590125

Filing Date: 01-Feb-2022

Applicant/Patent under Reexamination: Nuhn

Electronic Terminal Disclaimer filed on March 7, 2022

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	45156418
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Robert A.H. Brunet/Stephanie Janssens
Filer Authorized By:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	07-MAR-2022
Filing Date:	01-FEB-2022
Time Stamp:	10:20:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$170
RAM confirmation Number	E202237A20441165
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	47348 56857f4731638303e3911b078a63d06a8d2691da	no	3
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37969 d63f7897623f3055ffcc37b4f331fd0a406d5e84	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	85317		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/590,125

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	21 minus 20 =	* 1	x 50 =	50	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	880		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/590,125	02/01/2022	3617	880	NUN-0007-US6	21	1

CONFIRMATION NO. 2912

UPDATED FILING RECEIPT

59115
BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA



Date Mailed: 03/04/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Ian Nuhn, Sebringville, CANADA;

Applicant(s)

Nuhn Industries Ltd., Sebringville, CANADA;

Assignment For Published Patent Application

Nuhn Industries Ltd., Sebringville, CANADA

Power of Attorney: The patent practitioners associated with Customer Number 59115

Domestic Priority data as claimed by applicant

This application is a CON of 17/201,100 03/15/2021
which is a CON of 16/891,627 06/03/2020 PAT 10974557
which is a CON of 16/157,950 10/11/2018 PAT 10710422
which is a CON of 15/586,493 05/04/2017 PAT 10124638
which is a CON of 15/044,905 02/16/2016 PAT 9694636
which is a CON of PCT/CA2014/050789 08/18/2014
which claims benefit of 61/867,598 08/19/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 02/07/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/590,125**

Projected Publication Date: 06/09/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

AMPHIBIOUS PUMPING VEHICLE

Preliminary Class

440

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 172 of 1211

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

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Page 174 of 1211

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	17/590,125	Confirmation No. 2912
Applicant	:	Ian Nuhn	
Filed	:	02/01/2022	
TC/A.U.	:	n/a	
Examiner	:	n/a	
Docket No.	:	NUN-0007-US6	
Customer No.	:	59115	

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS

Sir:

In response to the Notice to File Missing Parts dated February 8, 2022, the excess claim fee of $50.00 was paid in our EFS submission of February 8, 2022, which was assigned EFS ID: 44940851 in the EFS Acknowledgement.

Respectfully submitted,
BRUNET & CO. LTD.

/Hans Koenig/

Date: March 2, 2022

Hans Koenig
Reg. No. 46,474
Tel.: (519) 474-0700

Electronic Acknowledgement Receipt

EFS ID:	45124263
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Hans O. Koenig
Filer Authorized By:	
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	02-MAR-2022
Filing Date:	01-FEB-2022
Time Stamp:	11:42:49
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	2022-03-02-ResponseNTFMP.pdf	14358 28e1e8b12932cfeca1165dd07b093c8935ced29f	no	1

Warnings:

Information:	
Total Files Size (in bytes):	14358

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/590,125	02/01/2022	3657	830	NUN-0007-US6	21	1

CONFIRMATION NO. 2912

FILING RECEIPT

59115
BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

OC000000131688426

Date Mailed: 02/08/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Ian Nuhn, Sebringville, CANADA;

Applicant(s)

Nuhn Industries Ltd., Sebringville, CANADA;

Assignment For Published Patent Application

Nuhn Industries Ltd., Sebringville, CANADA

Power of Attorney: The patent practitioners associated with Customer Number 59115

Domestic Priority data as claimed by applicant

This application is a CON of 17/201,100 03/15/2021
which is a CON of 16/891,627 06/03/2020 PAT 10974557
which is a CON of 16/157,950 10/11/2018 PAT 10710422
which is a CON of 15/586,493 05/04/2017 PAT 10124638
which is a CON of 15/044,905 02/16/2016 PAT 9694636
which is a CON of PCT/CA2014/050789 08/18/2014
which claims benefit of 61/867,598 08/19/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 02/07/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/590,125**

Projected Publication Date: 05/19/2022

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

AMPHIBIOUS PUMPING VEHICLE

Preliminary Class

267

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 181 of 1211

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/590,125

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	21 minus 20 =	* 1	x 50 =	50	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	880		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/590,125	02/01/2022	Ian Nuhn	NUN-0007-US6

CONFIRMATION NO. 2912

59115
BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ON M5H 2Y4
CANADA

FORMALITIES LETTER

OC000000131668427

Date Mailed: 02/08/2022

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing.

Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Additional claim fees of $ **50** as a small entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. Small entity discount is in effect. If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- $ **50** for **1** total claims over 20.
- $(**0**) previous unapplied payment amount.
- $ **50** TOTAL FEE BALANCE DUE.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/qtran/

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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Electronic Patent Application Fee Transmittal

Application Number:	17590125
Filing Date:	01-Feb-2022
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Filer:	Robert A.H. Brunet/Stephanie Janssens
Attorney Docket Number:	NUN-0007-US6

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	1	50	50
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**50**

Electronic Acknowledgement Receipt

EFS ID:	44940851
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Robert A.H. Brunet/Stephanie Janssens
Filer Authorized By:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	08-FEB-2022
Filing Date:	01-FEB-2022
Time Stamp:	11:43:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$50
RAM confirmation Number	E202228B44184729
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Fee Worksheet (SB06)	fee-info.pdf	37629 e28f0bae299a0cf977260b65bde8ea316dfb698c	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	37629		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/80 (07-17)
Approved for use through 01/31/2018. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

[X] Practitioners associated with Customer Number: 59115

OR

[ ] Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

[X] The address associated with Customer Number: 59115

OR

[ ]

Firm or Individual name		
Address		
City	State	Zip
Country		
Telephone	Email	

Assignee name and address: NUHN INDUSTRIES LTD.
P.O. Box 160, Sebringville, Ontario, N0K 1X0, Canada

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature Dennis F Nuhn	Date July 18, 2018
Name Dennis Nuhn	Telephone 519-393-6284
Title President	

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Nuhn Industries Ltd.

Application No./Patent No.: 17/590,125 Filed/Issue Date: 02/01/2022

Titled: AMPHIBIOUS PUMPING VEHICLE

Nuhn Industries Ltd., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. [x] The assignee of the entire right, title, and interest.

2. [ ] An assignee of less than the entire right, title, and interest (check applicable box):

   [ ] The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   [ ] There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. [ ] The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. [ ] The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. [x] An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 058844, Frame 0507, or for which a copy thereof is attached.

B. [ ] A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

   The document was recorded in the United States Patent and Trademark Office at

   Reel _____, Frame _____, or for which a copy thereof is attached.

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Robert A. H. Brunet/	02/02/2022
Signature	Date
Robert A. H. Brunet	55158
Printed or Typed Name	Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	44899350
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian Nuhn
Customer Number:	59115
Filer:	Robert A.H. Brunet/Stephanie Janssens
Filer Authorized By:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	02-FEB-2022
Filing Date:	
Time Stamp:	13:39:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	2018-07-18-POA-signed.pdf	525892 cfe9bbc2e0a3155d416987eb40a32c110dc683b7	no	2

Warnings:

Information:					
2	Assignee showing of ownership per 37 CFR 3.73	2022-02-02-St37.pdf	91699 226d226c4ca1f94be91be5a8355919dd9cca3f09	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	617591		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (04-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Ian NUHN	Nonprovisional Application Number (if known):	
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently $0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Robert A.H. Brunet/	Date February 1, 2022
Name (Print/Typed) Robert A.H. Brunet	Practitioner Registration Number 55,158

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☐ *Total of _____ forms are submitted.

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian NUHN
Filer:	Robert A.H. Brunet/Stephanie Janssens
Attorney Docket Number:	NUN-0007-US6

Filed as Small Entity

Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2100	2100
Pages:				
Claims:				
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70

Petition:	
Patent-Appeals-and-Interference:	
Post-Allowance-and-Post-Issuance:	
Extension-of-Time:	
Miscellaneous:	
Total in USD ($)	**3000**

Electronic Acknowledgement Receipt

EFS ID:	44888614
Application Number:	17590125
International Application Number:	
Confirmation Number:	2912
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian NUHN
Customer Number:	59115
Filer:	Robert A.H. Brunet/Stephanie Janssens
Filer Authorized By:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US6
Receipt Date:	01-FEB-2022
Filing Date:	
Time Stamp:	13:19:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$3000
RAM confirmation Number	E202221D20054587
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	2022-02-01-ADS.pdf	1932228 90546c9b8519527e02e92348b1688870ea2856e1	no	9
Warnings:					
Information:					
2		Spec-NUN-0007-US6.pdf	106294 487daadacc9c6bfa63ecb09f840c2a5d855a3098	yes	17

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	13
Claims	14	16
Abstract	17	17

Warnings:					
Information:					
3	Oath or Declaration filed	2018-10-11-Dec_INsigned.pdf	2668235 973d5ef855017e840c487e64fc171b54e4922fb1	no	1
Warnings:					
Information:					
4	Drawings-only black and white line drawings	Spec-Figures-NUN-0007-US6.pdf	1104542 2febaf6bd520bc94f4c4c0dbf173fa270bf87749	no	7
Warnings:					
Information:					
5	Information Disclosure Statement (IDS) Form (SB08)	2022-02-01-IDS1-US6.pdf	1665525 1c55d39029878ac950ccf6fbf9244e51fda89ec5	no	6

Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
6	Foreign Reference	CA-2002619.pdf	673271 836f34af754ca06ce827969fdea9620b85016c0b	no	17
Warnings:					
Information:					
7	Foreign Reference	DE-3431345.pdf	975910 a39a91d181d089447fe89f24a930452459319a09	no	15
Warnings:					
Information:					
8	Foreign Reference	DE-2364962.pdf	1051645 00ac4907863f83938fe0e3356a2cccd5b7bd79d2	no	19
Warnings:					
Information:					
9	Foreign Reference	WO-2008-038029-SameAs-CN-101687451.pdf	1746561 395f6304156511c1c413c0845c4fa707d9034073	no	39
Warnings:					
Information:					
10	Non Patent Literature	2014-11-05-WO-ISRonPCTCA2014050789.pdf	2338385 db0c24fcf327c2e10a1e98aeba963984c43c41fb	no	8
Warnings:					
Information:					
11	Non Patent Literature	2017-11-06-OA2-CN201480053275.PDF	84859 4ad831ec9056e73a100e58cbbaddebb091fc3b3c	no	13
Warnings:					
Information:					
12	Non Patent Literature	2017-03-02-OA1-CN201480053275.pdf	379516 108e7666a110917efcc5ba055670cfd9a7b9300b	no	18
Warnings:					

Information:					
13	Non Patent Literature	2017-01-05-OA1-USSN15044905.pdf	696108 f9e281faa6bcbc89f0d79956e55715ec916a06e1	no	17
Warnings:					
Information:					
14	Non Patent Literature	2017-08-23-OA1-USSN15586493.pdf	536644 17b7a3eaa3b47a69a794d97b042cbd1824c0a982	no	20
Warnings:					
Information:					
15	Non Patent Literature	2019-11-21-OA1-USSN16157950.pdf	207009 54e380256f028b2c10af1e69c5a47939cb5b4e59	no	6
Warnings:					
Information:					
16	Non Patent Literature	2020-09-14-OA1-USSN16891627.pdf	225030 7b67917952f431650218df3f0a741f9f375d3e44	no	6
Warnings:					
Information:					
17	Non Patent Literature	2021-02-01-OA2-USSN16891627.pdf	192882 5aa7dac313e859f60c5d7c05ebc3dac7f3ac03f6	no	5
Warnings:					
Information:					
18	Non Patent Literature	2017-08-23-OA1-EA201690422-31-cute.pdf	1468876 7eac24b8dfa0baf57cffc5c2a5d576cd4f306859	no	4
Warnings:					
Information:					
19	Non Patent Literature	2017-12-15-FinalOA-USSN15586493-cute.pdf	323342 5b8dc578c419f1937dc8c6d16c9534f51b3a1737	no	9
Warnings:					
Information:					

20	TrackOne Request	2022-02-01-Track1PriorityRequest.pdf	127672 346bf5dd7b9ea0cbd63058441b63f0194747cf51	no	1
Warnings:					
Information:					
21	Fee Worksheet (SB06)	fee-info.pdf	50809 8e9a8e904e24fb5d1fa7f3b2771cd5cf3c35ec34	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	18555343		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
Mr.	Ian		Nuhn	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	Sebringville	Country of Residence i	CA

Mailing Address of Inventor:

Address 1	PO Box 160		
Address 2			
City	Sebringville	State/Province	ON
Postal Code	N0K 1X0	Country i	CA

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	59115		
Email Address	patents@brunetco.com	Add Email	Remove Email

Application Information:

Title of the Invention	AMPHIBIOUS PUMPING VEHICLE		
Attorney Docket Number	NUN-0007-US6	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	1

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	17201100	2021-03-15

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17201100	Continuation of	16891627	2020-06-03	10974557	2021-04-13

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16891627	Continuation of	16157950	2018-10-11	10710422	2020-07-14

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16157950	Continuation of	15586493	2017-05-04	10124638	2018-11-13

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15586493	Continuation of	15044905	2016-02-16	9694636	2017-07-04

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15044905	Continuation of	PCT/CA2014/050789	2014-08-18

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/CA2014/050789	Claims benefit of provisional	61867598	2013-08-19

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Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

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Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

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	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

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Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Nuhn Industries Ltd.		
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Email Address			

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Assignee Information including Non-Applicant Assignee Information:

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	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

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Organization Name	Nuhn Industries Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

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Phone Number		Fax Number	
Email Address			

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Signature	/Robert A. H. Brunet/			Date (YYYY-MM-DD)	2022-02-01
First Name	Robert	Last Name	Brunet	Registration Number	55158

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US6
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Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

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AMPHIBIOUS PUMPING VEHICLE

Cross-Reference to Related Applications

[0001] This application is a continuation of United States Patent Application 17/201,100 filed March 15, 2021, which is a continuation of United States Patent Application 16/891,627 filed June 3, 2020, which is a continuation of United States Patent Application USSN 16/157,950, filed October 11, 2018 now issued under patent number US 10,710,422 on July 14, 2020, which is a continuation of USSN 15/586,493 filed May 4, 2017, now issued under patent number US 10,124,638 on November 13, 2018, which is a continuation of United States Patent Application USSN 15/044,905 filed February 16, 2016 now issued under patent number US 9,694,636 on July 4, 2017, which is a continuation of international patent application PCT/CA2014/050789, filed August 18, 2014, which claims the benefit of United States patent application 61/867,598 filed August 19, 2013, the entire contents of which are herein incorporated by reference.

Technical Field

[0002] 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.

Background

[0003] Manure produced during animal husbandry, particularly 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 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

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the manure. Pumps for use in recirculating manure from smaller pits are known; however, these pumps are typically suitable for accessing the pit or lagoon from its edge and are connected to a tractor or similar land vehicle for operational power. They are therefore limited in their ability to recirculate manure to the middle of large lagoons, which are becoming increasing common as the size of animal husbandry operations increases.

[0004] Accordingly, there is a need for improved pumps and vehicles equipped for pumping, particularly pumps and vehicles suitable for use with large manure lagoons.

Summary of the Invention

[0005] 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.

[0006] The floatable vehicle body may be in the shape of a mono-hull, a catamaran or a barge. Floatation of the vehicle body may be provided by a displacement hull, pontoon elements, or buoyant elements, for example foam filled buoyant chambers, such as are used for supporting floating docks. The vehicle body may be made using a variety of suitable materials, for example, fiberglass, aluminum, plastics, steel, etc.

[0007] The ground engaging propulsion structure may comprise ground engaging elements of the type suitable for powering a vehicle across wet or muddy terrain. For example, the ground engaging propulsion structure may comprise an endless track or a set of wheels. The set of wheels may comprise two or more wheels, for example four wheels, six wheels or eight wheels. May be provided in pairs with one wheel of each pair disposed on opposite sides of the vehicle. When the vehicle comprises a set of wheels, any number of the wheels may be driven in order to provide propulsion for the

vehicle. Although at least two wheels may be driven, it is preferred that at least four wheels are driven. Although the vehicle may be provided with steering structure configured to change direction of one or more pairs of wheels, it is preferred that the wheels are independently driven at variable speeds, allowing them to be fixed in direction relative to the vehicle body. This provides directional control of the vehicle, even in wet or muddy conditions where conventional steering is likely to be ineffective due to sliding of the steerable set of wheels. A variety of drive mechanisms may be used to operate the wheels independently at variable speed; for example, at least one motor may be connected to each wheel that is hydraulically or electrically operable at variable speed. A transmission may alternatively be provided with structure configured to allow each wheel to be operated at variable speeds.

[0008] The ground engaging propulsion structure is configured to raise and lower relative to the vehicle body. Raising and lowering may be provided by telescoping structure or lever structure configured to pivot relative to the vehicle body. The lever structure may comprise a linear actuator that is driven, for example hydraulically, to cause pivoting of the lever arm relative to the vehicle body and thereby raise or lower the wheels. Each wheel is preferably raised or lowered at the same time. Alternatively, the lever structure may comprise a planetary drive that is either mechanically or hydraulically powered to cause pivoting of the lever arm.

[0009] The vehicle further comprises a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump. The power source may be self-contained on the vehicle or may be linked to shore. For example, the power source may comprise an internal combustion engine, a fuel-cell, electric batteries, etc. The power source may comprise an electric motor that may be driven from shore via an electrical cable. The power source may be connected to a generator for supplying electrical power to electrical systems on board the vehicle. The power source may be connected to a hydraulic pump for supplying hydraulic fluid pressure to hydraulic systems on board the vehicle. The power source may be connected to the fluid pump

hydraulically, electrically, or via a mechanical drive. A single power source may be used to provide power to all vehicle systems, including the fluid pump. In one embodiment, the power source is an internal combustion engine that is connected to the fluid pump and a hydraulic pump via a mechanical drive. The mechanical drive may comprise a gearbox to provide an appropriate rotational speed for the fluid pump. The mechanical drive may comprise a gearbox to provide an appropriate rotational speed for the hydraulic pump. The fluid pump and hydraulic pump may be operated at the same or different rotational speeds.

[0010] The fluid pump may comprise a pump housing configured for immersion within the fluid. The pump housing may comprise a bottom fluid inlet and at least two tangential fluid outlets. 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 cause raising and lowering of the fluid pump, especially the fluid pump housing, relative to the vehicle body. For example, a hydraulically or electrically driven linear actuator 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 telescoping connections to the single fluid conduit. Lowering the fluid pump for immersion into the fluid obviates the need for priming the fluid pump, which can be problematic when the fluid is manure comprising solid materials that can plug the pump or priming structure. Immersion of the pump also simplifies intermittent operation of the pump, due to eliminating potential loss of prime, and reduces the need for pump maintenance.

[0011] The vehicle comprises a first fluid nozzle configured to direct fluid through the air. The fluid nozzle is connected by fluid conduit to the fluid pump. The fluid conduit connecting the fluid nozzle to the fluid pump may comprise the single fluid conduit that is connected to the tangential fluid outlets of the pump. The vehicle may further

comprise a plurality of fluid nozzles comprising the first fluid nozzle and at least one second fluid nozzle connected to the fluid conduit. The first fluid nozzle may comprise a front nozzle and the second fluid conduit may comprise the rear nozzle or a pair of rear nozzles. The plurality of fluid nozzles may comprise at least two side fluid nozzles on opposite sides of vehicle connected to the fluid conduit. The at least two side fluid nozzles may comprise a pair of fluid nozzles on opposite sides of the vehicle connected to the fluid conduit; thus, the at least two side fluid nozzles may comprise a total of four fluid nozzles. The vehicle may further comprise valve structure configured to proportion fluid flow between the plurality of fluid nozzles. The valve structure may comprise a valve corresponding to each fluid nozzle. The valve corresponding to each fluid nozzle may be actuatable, for example hydraulically or electrically. The valve structure may be actuatable remotely.

[0012] The plurality of fluid nozzles and the valve structure may cooperate to provide directional control, motive power, or a combination thereof for the vehicle when floating. For example, by closing valve structure associated with the fluid nozzle(s) on the right side of the vehicle, fluid flow is directed to the nozzle(s) on the left side of the vehicle, causing the vehicle to turn to the right. In one embodiment, steering is achieved solely by cooperation of the plurality of fluid nozzles and the valve structure; accordingly, the vehicle does not comprise a rudder. In one embodiment, movement of the vehicle while floating is achieved solely by cooperation of at least the second fluid nozzle and the valve structure; accordingly, the vehicle does not comprise a propeller.

[0013] One or more fluid nozzles may comprise adjustment structure that is powered and configured to adjust an angle of the fluid nozzle relative to the floatable vehicle body. For example, the first fluid nozzle may comprise first adjustment structure and the second fluid nozzle(s) may comprise second adjustment structure, each adjustment structure configured to adjust an angular orientation of its respective fluid nozzle(s) in a vertical and/or horizontal plane. In one embodiment, both the first fluid nozzle and the second fluid nozzle(s) are adjustable in a vertical plane. The second

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fluid nozzle(s) is/are adjustable in the vertical plane by an amount sufficient to cause forward or backward movement of the vehicle when floating. In other words, the second fluid nozzle(s) is/are adjustable to point at least partially toward the front of the vehicle at least partially toward the rear of the vehicle. The second fluid nozzle(s) may be configured to direct fluid through the air in a substantially downward direction. The first fluid nozzle may be configured to direct fluid through the air in a substantially upward direction. The side fluid nozzle(s) may be configured to direct fluid through the air in a substantially downward direction. One or more side fluid nozzle(s) may comprise adjustment structure configured to adjust an angular orientation of its respective side fluid nozzle(s) in a vertical plane.

[0014] The location of at least the ground engaging propulsion structure, the power source and the fluid pump may be selected to provide a desired location for a center of gravity of the vehicle. The desired location for the center of gravity of the vehicle may be selected to improve handling characteristics of the vehicle while floating. The center of gravity may be located along the longitudinal centerline of the vehicle. The center of gravity may be located substantially in the middle of the vehicle, for example at an intersection of longitudinal centerline of the vehicle and the transverse centerline of the vehicle. The center of gravity may be located rearward of the transverse centerline of the vehicle. The center of gravity may be located forward of the transverse centerline of the vehicle. Thus the ground engaging propulsion structure, power source, and fluid pump cooperate together to improve handling characteristics of the vehicle.

[0015] The vehicle may comprise remote control structure configured to cause the vehicle to be remotely controllable by an operator remote from the vehicle. The vehicle may be remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating. The remote control structure may comprise a wireless transmitter and a wireless receiver. The remote control structure may be configured to control the speed and or direction of the vehicle

when ground engaging and when floating. The remote control structure may be configured to control an amount of fluid flow from at least the first nozzle. The remote control structure may be configured to control an angular orientation of at least the first nozzle relative to the vehicle body. The remote control structure may be configured to control an amount of fluid flow from at least the second nozzle(s). The remote control structure may be configured to control an angular orientation of at least the second nozzle(s) relative to the vehicle body. The remote control structure may be configured to control the valve structure in order to proportion fluid flow between the plurality of fluid nozzles. The remote control structure may be configured to control rotational speed of the fluid pump. The remote control structure may be configured to raise and lower the fluid pump. The remote control structure may be configured to raise and lower the ground engaging propulsion structure. The remote control structure may be configured to start and stop the power source.

[0016] Further features of the invention will be described or will become apparent in the course of the following description.

Brief Description of the Drawings

[0017] In order that the invention may be more clearly understood, embodiments thereof will now be described in detail by way of example, with reference to the accompanying drawings, in which:

[0018] Fig. 1 shows a perspective view of an embodiment of the vehicle with wheels lowered;

[0019] Fig. 2 shows another perspective view of the vehicle with wheels raised;

[0020] Fig. 3 shows a perspective view of the underside of the vehicle; and,

[0021] Fig. 4 shows a perspective view of a set of wheels of the vehicle from the underside of the vehicle;

[0022] Fig. 5 shows a perspective view of the first fluid nozzle of vehicle;

[0023] Fig. 6 shows a perspective view of a second fluid nozzle of the vehicle;

[0024] Fig. 7 shows a perspective view of a mechanical drive connecting the power source of the vehicle to the fluid pump and a hydraulic pump of the vehicle;

[0025] Fig. 8 shows a perspective view of the fluid pump from the underside of the vehicle.

Detailed Description

[0026] In describing the figures, like features are referred to by like reference numerals. Although not all features indicated on a particular drawing are necessarily described with reference to that drawing, all of the features are described with reference to at least one of the drawings.

[0027] Referring to Figs. 1-3, an amphibious vehicle comprises a vehicle body 1 incorporating buoyant elements 2. The buoyant elements comprise flotation tanks of the type that may be foam filled and used, for example, in the construction of floating docks. The vehicle comprises a ground engaging propulsion structure comprising two sets of wheels 3, 4. Each wheel is rotatably mounted to lever structure 5 that is pivotally attached to the vehicle body. Each lever structure 5 is driven by a hydraulic actuator 6 that is operable to cause raising and lowering of the wheels 3, 4 by pivoting of the lever structure 5. A power source 7 comprising an internal combustion engine, for example a diesel engine, is mounted to the vehicle body. A mechanical drive 8 connects the power source 7 to the fluid pump 9 and a hydraulic pump 10 that is used to provide hydraulic system fluid pressure for the vehicle.

[0028] The fluid pump 9 comprises a pump housing 18 with three tangential fluid outlets 19 that are combined into a single fluid conduit 20. The single fluid conduit 20 is then split into left side 21 and right side 22 fluid conduits which connect at the front and

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rear of the vehicle to form a complete circuit. The fluid pump 9 is thus fluidically connected to all fluid nozzles of the vehicle via the fluid conduits 20-22.

[0029] A first fluid nozzle 11 is provided at a front of the vehicle. The first fluid nozzle 11 comprises first articulation means 12 that is hydraulically powered to cause the nozzle to change angular orientation relative to the vehicle body 1 in a vertical plane. A pair of second fluid nozzles 13 is provided at a rear of the vehicle. The second fluid nozzles 13 comprise a second articulation means 14 that is hydraulically powered to cause the nozzles to change angular orientation relative to the vehicle body 1 in a vertical plane. The first and second fluid nozzles are part of a plurality of fluid nozzles of the vehicle. The plurality of fluid nozzles further comprises side fluid nozzles 16, 17 on opposite sides of the vehicle. A pair of left side fluid nozzles 16 and a pair of right side fluid nozzles 17 are provided.

[0030] Valve structure comprising a valve 15 corresponding to each fluid nozzle 11, 13, 16, 17 is also provided. The valves 15 are powered and operable to open or close. The valves 15 may be opened fully or partially to proportion flow between the plurality of fluid nozzles. Cooperation between the valves 15 and the plurality of fluid nozzles is used to provide directional control and motive power for the vehicle while floating. For example, proportioning fluid flow from the right side fluid nozzles 17 to the left side fluid nozzles 16 causes the vehicle to turn to the right will floating. Similarly, fluid flow may be proportioned between the first fluid nozzle 11 and the second fluid nozzles 13 to cause the vehicle to move forward or backward. By rotating the second fluid nozzles 13 fully downwardly and then up toward the front of the vehicle using the second articulation means 14, the vehicle may also be directed rearward and/or slowed in its forward movement speed. Thus, the combination of proportioning flow between the plurality of fluid nozzles using the valve structure and/or articulating the nozzles may be used to control forward, rearward, left and right movement and speed of the vehicle. The flow rate of the fluid pump 9 may also be adjusted to enhance directional and speed control via the plurality of nozzles while floating.

[0031] Referring additionally to Fig. 4, each wheel of the front set of wheels 3 is rotatably attached to its corresponding lever 5 by a spindle 23. Fixedly mounted to lever 5 is a bracket 24 supporting a pair of hydraulic motors 25. Each hydraulic motor 25 has an output gear (not shown) that is engaged with a drive gear 26. The drive gear 26 is fixedly attached to a rim 27 of each wheel 3 concentric with the spindle 23. Referring to the right side wheel of the set of wheels 3 (showing an interior of the rim 27), operation of the hydraulic motors 25 in a clockwise direction causes the drive gear 26 to rotate in a counterclockwise direction, moving the vehicle forward. Reversing the direction of operation of the hydraulic motors 25 causes the vehicle to move rearward. By 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. The motors 25 connected to the rear set of wheels 4 work in a similar manner to those described for the front set of wheels 3. Thus, directional and motive control of the vehicle (forward/reverse) while on land is controlled by varying the relative speed and rotational direction of the hydraulic motors 25.

[0032] Turning now to Fig. 5, the first fluid nozzle 11 is able to change angular direction in a vertical plane relative to the vehicle body 1 through operation of a powered first articulation means 12. The first articulation means 12 comprises a hydraulic first articulation cylinder 28 that is coupled to a four bar linkage 29. The four bar linkage serves to amplify the effective stroke length of the first articulation cylinder 28 to cause the nozzle to move through a larger degree of motion in the vertical plane than if the linkage 29 were not present. The first fluid nozzle 11 is connected to the fluid conduits 21, 22 via a flexible conduit 30 that permits articulation of the nozzle. Valves 15 are provided to proportion flow to the first fluid nozzle in a manner as described previously.

[0033] Referring to Fig. 6, the second fluid nozzles 13 are connected to the fluid conduits 21, 22 by articulation means 14 that comprises a hydraulic second articulation cylinder 31 mounted to the vehicle body 1 and connected to a rotatable conduit section 32. Actuation of the second articulation cylinder 31 causes the rotatable conduit section

32 to rotate relative to the first and second fluid conduits 21, 22. The second fluid nozzles 13 are provided on rotatable conduit section 32 and thus rotate with the conduit section 32 upon actuation of the articulation cylinder 31. This causes the nozzles 13 to change angular orientation relative to the vehicle body 1 in a vertical plane. The geometry of the second articulation cylinder 31 and the rotatable conduit section 32 is such that the nozzles 13 may be rotated fully downwardly and then upwardly towards the front of the vehicle. This allows an operator to change the amount of forward movement to slow or even reverse forward movement of the vehicle. When operated in conjunction with the valves 15, the nozzles 13 and second articulation structure 14 provide a high degree of control over forward and reverse movement of the vehicle.

[0034] Referring to Fig. 7, the power source 7 comprises an internal combustion engine connected to a mechanical drive 8 that delivers power to the pump 9 (not shown in Fig. 7) and also to the hydraulic pump 10 that is used to provide hydraulic fluid pressure to the vehicle's hydraulic systems. A transmission is provided within the mechanical drive 8 that allows the rotational speed of the fluid pump 9 to be adjusted independently of the rotational speed of the hydraulic pump 10. The power source 7 is thus mechanically connected to both the fluid pump 9 and the hydraulic pump 10.

[0035] Referring to Fig. 8, the fluid pump 9 comprises a pump housing 18 comprising three tangential fluid outlets 19 that are connected via flexible pump outlet conduits 33 to a combiner 34 that is used to combine the fluid output of the tangential fluid outlets 19 into the single conduit 20. A pump actuation cylinder 35 is provided to cause raising and lowering of the pump 9 and especially the pump housing 18 relative to the vehicle body 1. A telescoping pump support structure 36 is provided for use in combination with the pump actuation cylinder 35. A mechanical drive shaft (not shown) runs through the telescoping pump support structure 36 to provide power to the pump impeller 37. When powered, the impeller 37 draws the fluid to be pumped through an enlarged bottom fluid opening 38 of the pump housing 18. By immersing the pump housing 18 in the fluid, fluid is allowed to enter the pump housing, thereby obviating the

need for priming the pump. Raising the pump 9 via the pump actuation cylinder 35 and telescoping pump support structure 36 allows the vehicle to exit the lagoon (or similar fluid reservoir) without damaging the pump. Thus, these structures cooperate with the ground engaging propulsion structure to allow the vehicle to operate on land.

[0036] An example of a pump 9 suitable for use with the vehicle is disclosed in co-pending United States Patent Application 13/038,189 filed March 1, 2011, entitled Pump for Immersion Within a Fluid Reservoir, which is incorporated herein by reference.

[0037] The location of at least the ground engaging propulsion structure, the power source and the fluid pump are selected to provide a desired location for a center of gravity of the vehicle. The desired location for the center of gravity of the vehicle is selected to improve handling characteristics of the vehicle while floating. The center of gravity is located along the longitudinal centerline of the vehicle, substantially in the middle of the vehicle.

[0038] A remote control structure 40 comprises an antenna configured to cause the vehicle to be remotely controllable by an operator remote from the vehicle. The remote control structure comprises a wireless transmitter used by the operator and a wireless receiver on the vehicle. The wireless receiver interfaces with a hydraulic control center on the vehicle to permit control of hydraulically operated components, such as hydraulic cylinders, valves, motors, etc. This allows the operator to control vehicle speed and direction on land or when floating, to raise the wheels and to change the angular orientation of the first and second fluid nozzles. A wireless engine starter is provided to control operation of the internal combustion engine used as a power source. A set of hydraulic controls is optionally provided to modulate engine speed and/or fluid pump rotational speed. Thus, a variety of functions may be controlled remotely that allow the vehicle to operate on land or when floating.

[0039] 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 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 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 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 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.

[0040] The novel features will become apparent to those of skill in the art upon examination of the description. It should be understood, however, that the scope of the claims should not be limited by the embodiments, but are intended by the inventor to be given the broadest interpretation consistent with the wording of the claims and the specification as a whole.

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Claims:

1. An amphibious vehicle comprising:

a floatable vehicle body;

ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;

a fluid pump for pumping liquid manure;

a power source connected to a hydraulic pump, the power source configured to provide power to both the ground engaging propulsion structure and the fluid pump; and,

a wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the fluid pump; (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.

2. The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump.

3. The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof.

4. The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening.

5. The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit.

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6. The vehicle of claim 2, wherein the vehicle further comprises a nozzle at the end of the conduit.

7. The vehicle of claim 1, wherein the at least one of speed and direction of the vehicle when the vehicle is floating is controlled by a fluid mover.

8. The vehicle of claim 1, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.

9. The vehicle of claim 8, wherein the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.

10. The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.

11. The vehicle of claim 10, wherein the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.

12. The vehicle of claim 4, wherein the power source is connected to the hydraulic pump by a mechanical drive and connected to the fluid pump by the mechanical drive.

13. The vehicle of claim 12, wherein the wireless remote control is configured to operate the hydraulic motor to operate the ground engaging propulsion structure at variable speed.

14. The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels.

15. The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels.

16. The vehicle of claim 14, wherein the set of wheels comprises four powered wheels, each wheel of the set of wheels is independently powered and is operable at variable speed.

17. The vehicle of claim 16, wherein the wheels are operable at variable speed by the hydraulic motor.

18. The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit.

19. The vehicle of claim 17, wherein the at least one of speed and direction of the vehicle when the vehicle is floating is controlled by a fluid mover.

20. The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.

21. The vehicle of claim 20, wherein the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.

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ABSTRACT

An amphibious vehicle has a floatable vehicle body; ground engaging propulsion structure having a plurality of ground engaging elements powered by a hydraulic motor; a fluid pump for pumping liquid manure; a power source connected to a hydraulic pump and configured to provide power to both the ground engaging propulsion structure and the fluid pump; and, remote control structure for controlling the ground engaging propulsion structure and a flow of fluid from the fluid pump. The speed and/or direction of the vehicle is remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating.

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PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	AMPHIBIOUS PUMPING VEHICLE

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 15/044,905

filed on February 16, 2016.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Ian Nuhn Date (Optional): MAR 10TH 16.

Signature:

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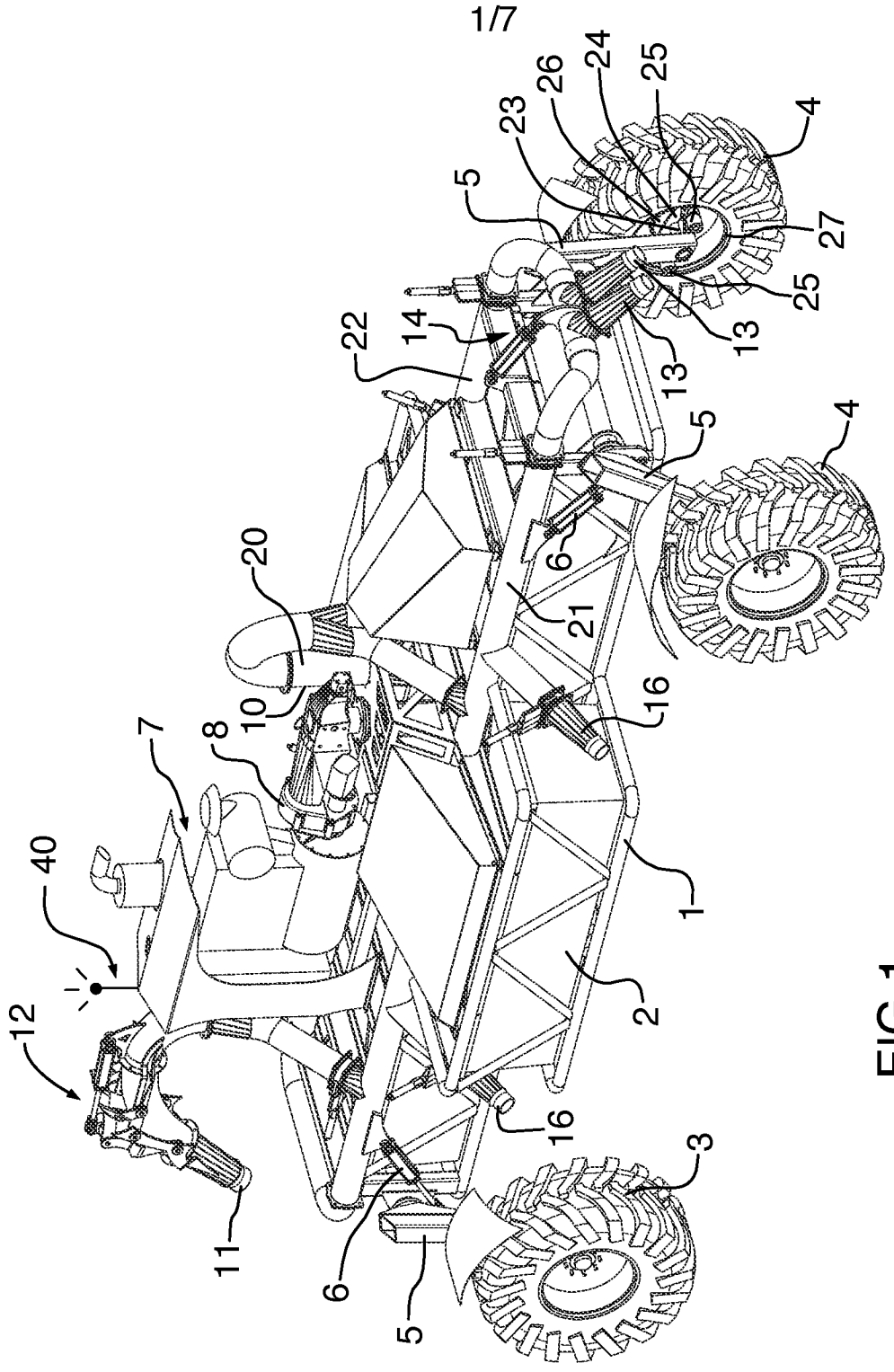


FIG.1

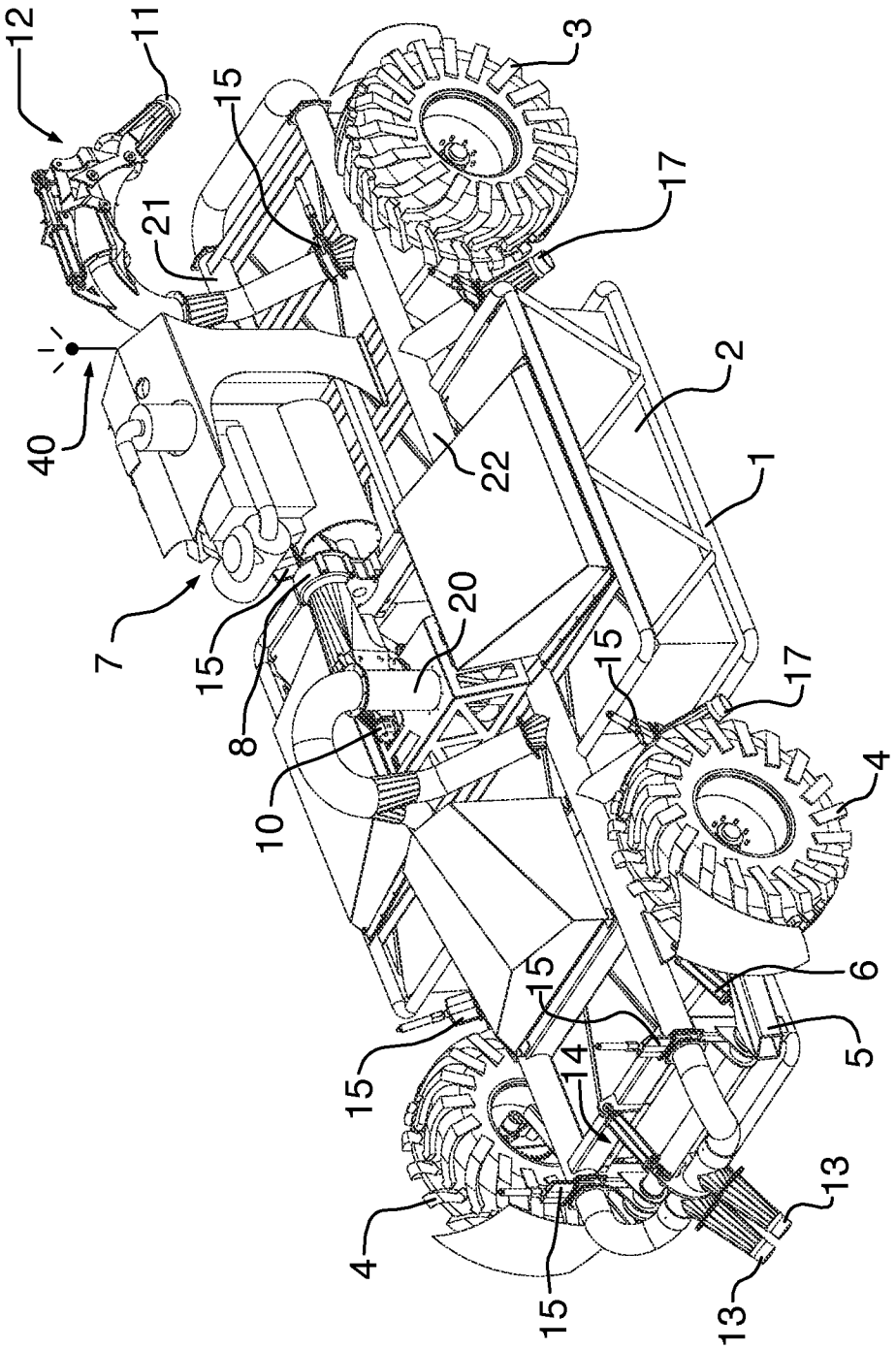


FIG.2

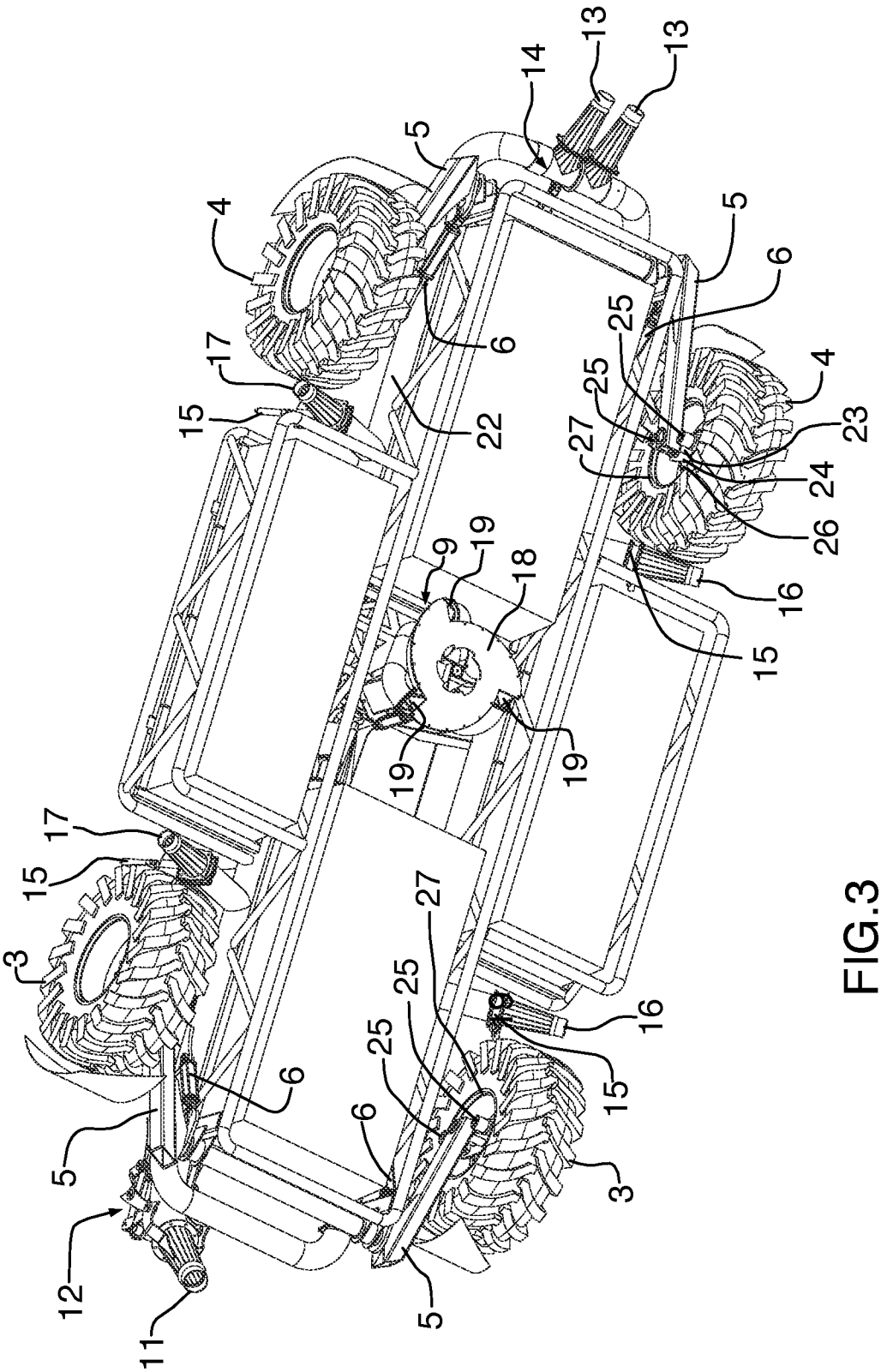


FIG.3

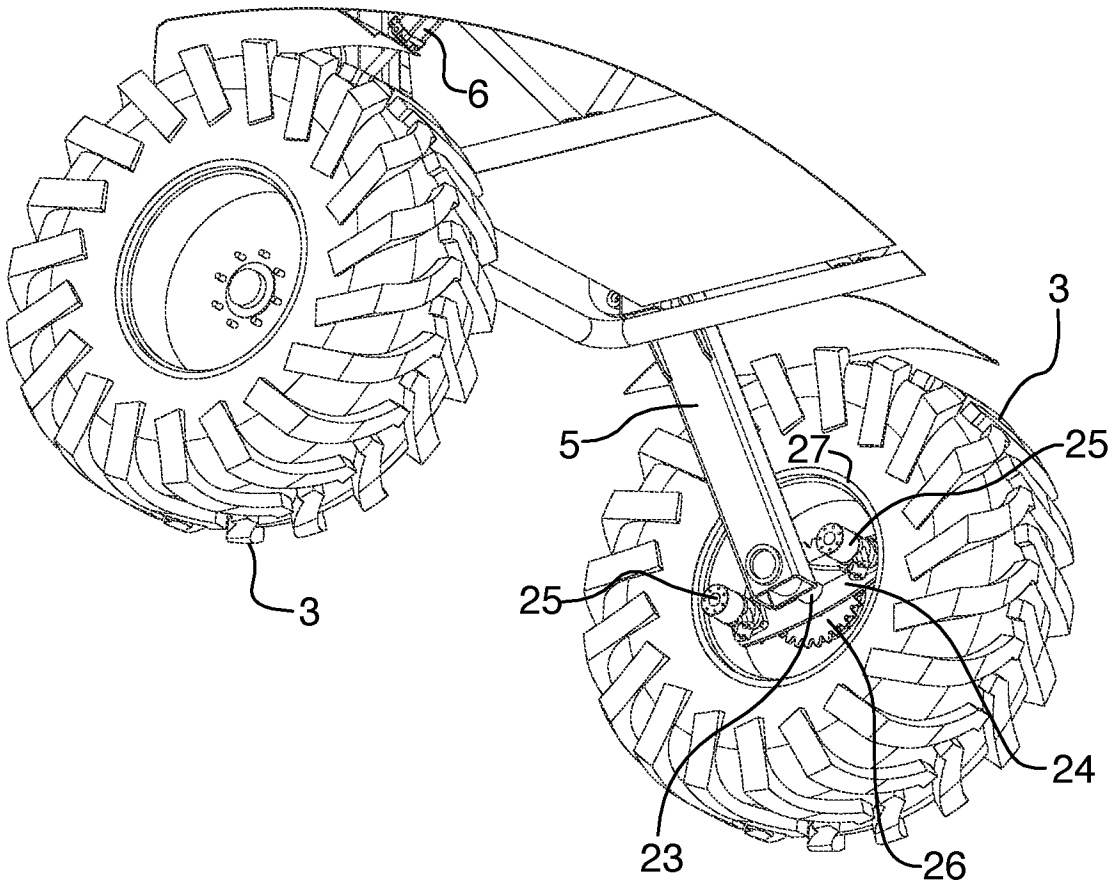


FIG.4

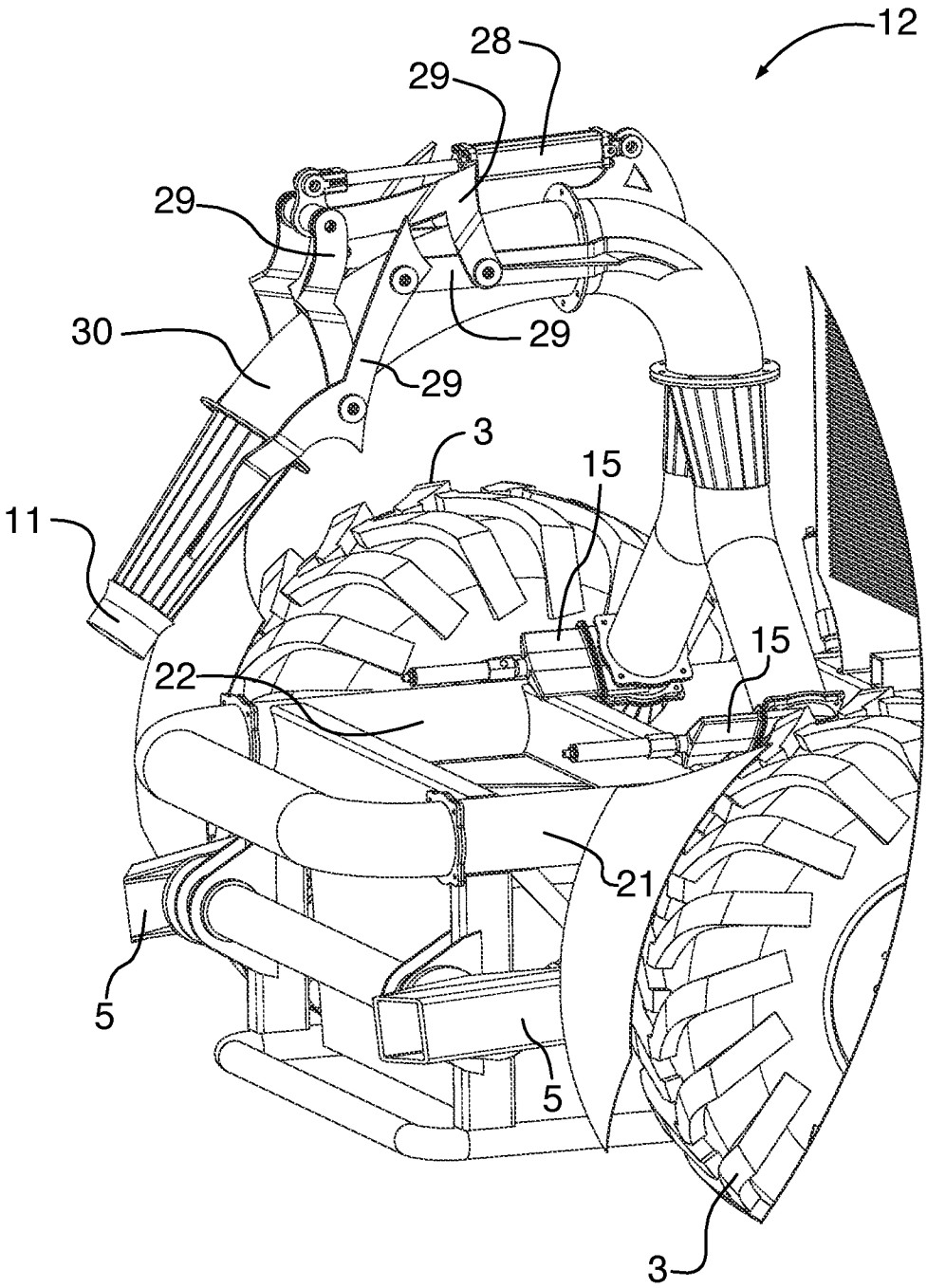


FIG.5

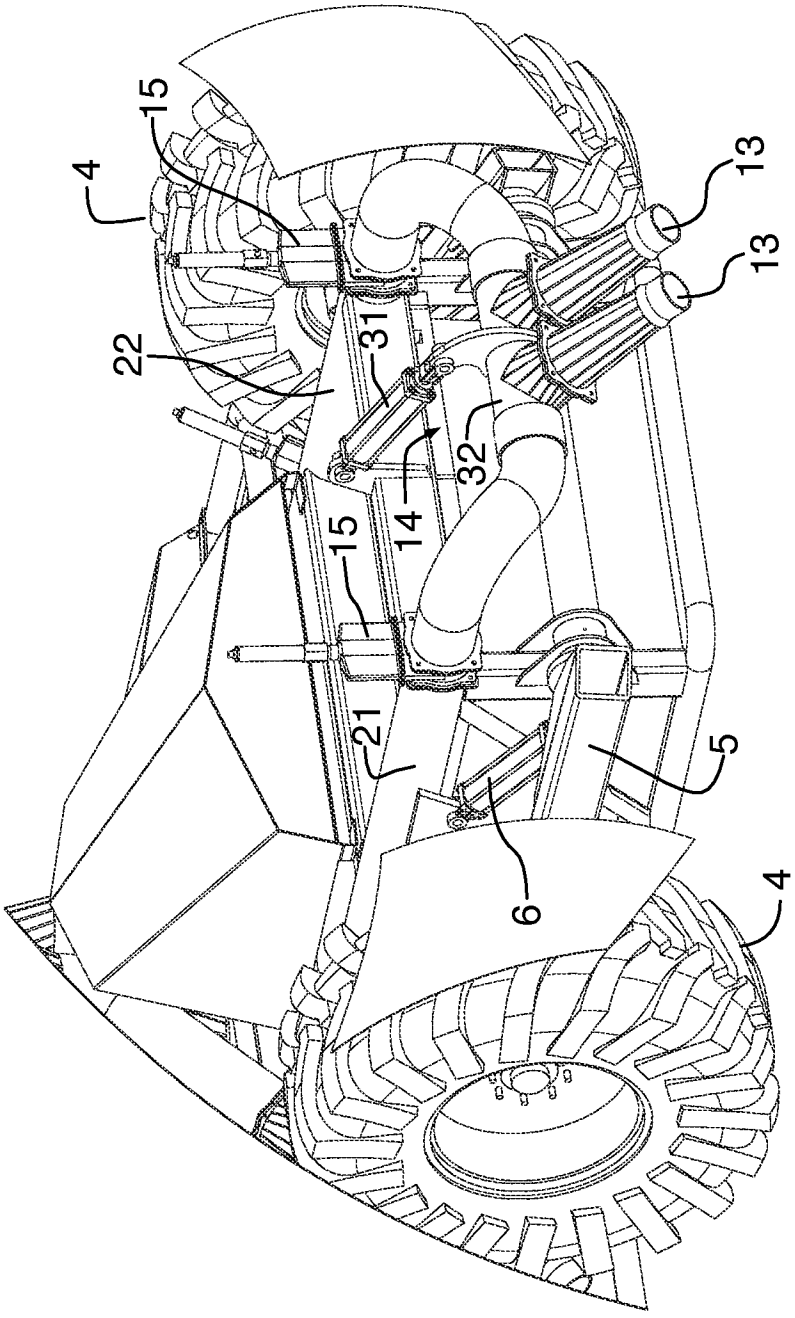


FIG.6

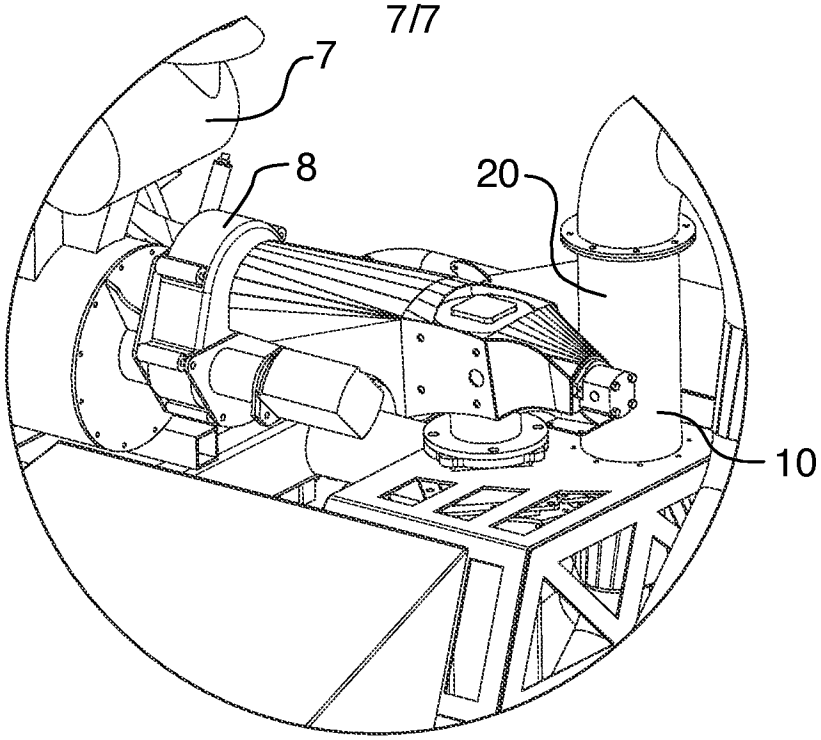


FIG.7

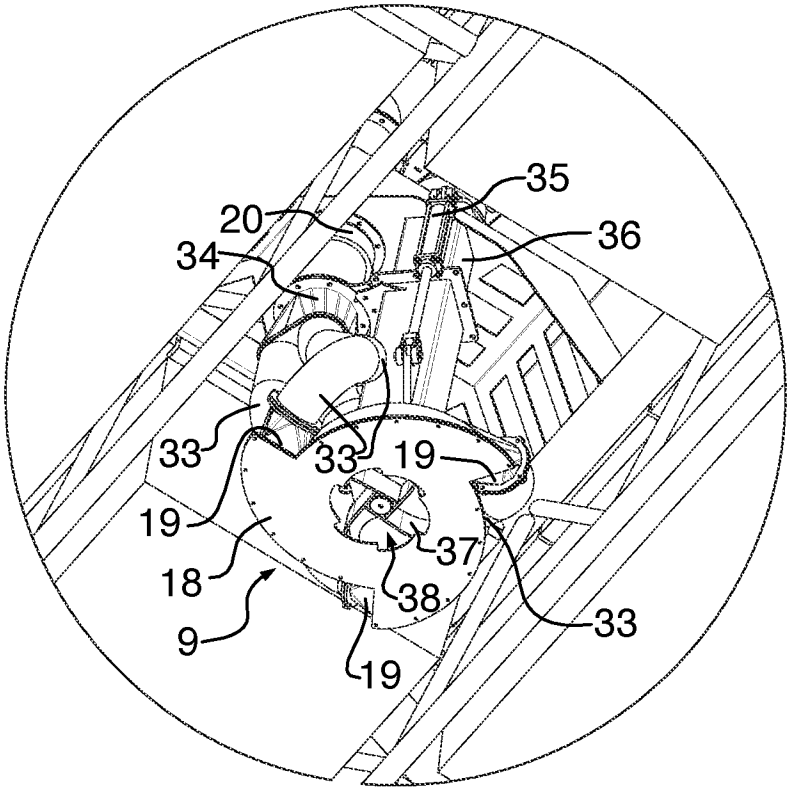


FIG.8

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Application Number	
Filing Date	
First Named Inventor	NUHN, Ian
Art Unit	
Examiner Name	
Attorney Docket Number	NUN-0007-US6

U.S.PATENTS

Examiner Initial*	Cite No	Patent Number	Kind Code1	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	4594006	A	1986-06-10	Depeault	
	2	4406413	A	1983-09-27	Houle	
	3	5176098	A	1993-01-05	Royle	
	4	3384047	A	1968-05-21	Remley	
	5	1943152	A	1934-01-09	Weiss	
	6	2586218	A	1952-02-19	Gazda	
	7	9462741	B2	2016-10-11	Puck	
	8	9572297	B2	2017-02-21	Puck	

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	9	10118138	B2	2018-11-06	Tews	
	10	8256692	B2	2012-09-04	Knowles	

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	2	20140112093	A1	2014-04-24	Puck	
	3	20100144220	A1	2010-06-10	Bailey	
	4	20150258868	A1	2015-09-17	Visscher	
	5	20140288763	A1	2014-09-25	Bennett et al.	
	6	20180343786	A1	2018-12-06	Svenby et al.	
	7	20140312156	A1	2014-10-23	Minino et al.	

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	2	3431345	DE	A1	1986-03-06	Lullmann		☒
	3	2364962	DE	A1	1975-07-03	Kronseder		☒
	4	2008/038029	WO	A2	2008-04-03	Gibbs Technologies Limited	page 5 line 28 to page 6 line 24, Figs. 4-7	☐

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	1	International Search Report and Written Opinion, PCT/CA2014/050789, dated 2014-11-05.	☐
	2	Translation of Chinese Office Action dated March 2, 2017 on CN 201480053275.	☐
	3	Translation of Chinese Office Action dated November 6, 2017 on CN 201480053275.	☐
	4	Office Action dated August 23, 2018 on EA 201690422-31.	☒

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	Application Number	
	Filing Date	
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US6

	5	Office action dated January 5, 2017 on USSN 15/044,905.	☐
	6	Office action dated August 23, 2017 on USSN 15/586,493.	☐
	7	Office action dated December 15, 2017 on USSN 15/586,493.	☐
	8	Office action dated November 21, 2019 on USSN 16/157,950.	☐
	9	Office action dated September 14, 2020 on USSN 16/891,627.	☐
	10	Office action dated February 1, 2021 on USSN 16/891,627.	☐

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☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

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A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A.H. Brunet/	Date (YYYY-MM-DD)	2022-02-01
Name/Print	Robert A.H. Brunet	Registration Number	55158

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BREVETS
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(19)(CA) **CANADIAN PATENT** (12)

PATENTS
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INDUSTRIAL DESIGN
INTEGRATED CIRCUIT TOPOGRAPHY

(54) Agitator and Pump Assembly

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(57) 8 Claims

19 SEP. 1995

Abstract of the Disclosure

An agitator and pump assembly adapted to be trailed behind a vehicle and to be moved into a manure pond, wherein the apparatus includes a pump housing at the end of an elongated frame supported on a wheeled sub-frame. The wheeled sub-frame is pivotally connected near one end to a midpoint of the elongated frame. The pump housing includes a rotating bladed impeller having an axis of rotation which is at an acute angle to the elongated frame, and a screw pump extends above the housing for thrusting the material downwardly through the housing upon rotation thereof.

The present invention relates to an agitator and pump assembly for mixing and pumping slurry from holding ponds or lagoons in which animal manure is collected.

The inventor has obtained U.S. Patent 4,594,006, issued June 10, 1986, relating to a pump for mixing and pumping manure ponds. Such ponds are a combination of liquid and layers of hand-caked dried solids. As described in the above-mentioned patent, a combination of a vertical screw pump and an impeller is proposed to handle the material. The screw pump provides a vertical component to the flow of the liquid and solids to break up the caked layers, and the impeller acts as a pump to evacuate the liquid and solids in suspension through a drainage pipe directed outboard the pond. The impeller can also be used to direct the liquid through a jet nozzle having a horizontal component for the purpose of breaking up the caked layers and causing the solids to be mixed and suspended in the liquid.

The device of the above patent is mounted on a frame which is meant to be set up vertically in the pond. Given that such ponds are of varied depths and that it is not always possible, in the case of a shallow pond, to place the frame with the associated screw pump in a vertical attitude, the practical benefits of such an apparatus may be limited, in a portable version.

It is an aim of the present invention to provide an improved apparatus of the type described in U.S. Patent 4,594,006.

It is a further aim of the present invention to provide a portable agitator and manure pond pump which can be used in virtually any manure pond regardless of the depth.



It is a further aim of the present invention to provide an easily transportable agitator and manure pump apparatus which can be easily maneuvered by a conventional farm tractor and can be transported over roads by being trailed behind a light vehicle.

A construction in accordance with the present invention comprises an elongated frame having a longitudinal axis, a pump housing mounted at one end of the frame, a bladed impeller is mounted for rotation about a rotation axis in the pump housing, means are provided for mounting the other end of the elongated frame to a transport vehicle in an articulate manner, means provided for supporting and locating the elongated frame in the manure pond, including a sub-frame pivotally mounted to the elongated frame, runner means provided on the sub-frame, and positive motor means for controlling the angle of the sub-frame relative to the elongated frame when the runner means are in contact with the bottom of the manure pond.

More specifically the bladed impeller mounted for rotation about the rotation axis in the pump housing extends at an angle of between 30° and 45° from the longitudinal axis of the elongated frame and a bladed thrust means is mounted for rotation, above the pump housing in a direction of thrust away from the rotary impeller. More specifically the bladed thrust means is mounted in the axis of the rotary impeller.

Having thus generally described the nature of the invention, reference will now be made to the accompanying drawings, showing by way of illustration, a preferred embodiment thereof, and in which:

Fig. 1 is a side elevation view of the present invention in a transport position;

Fig. 2 is a side elevation of the device shown in Fig. 1 with the apparatus prepared to be put into operation;

Fig. 3 is a side elevation of the apparatus shown in Fig. 2 in a subsequent operative position;

Fig. 4 is a side elevation of the apparatus shown in Fig. 3 in a successive operative position;

Fig. 5 is a side elevation of the apparatus shown in Fig. 4 in a successive operative position; and

Fig. 6 is a fragmentary enlarged vertical cross-section of a detail shown in Figs. 1 to 5.

An agitator and pump assembly 10 is illustrated in the drawings which includes an elongated frame 12 carrying a pump housing 14 at one end thereof. A sub-frame 16 is pivotally connected to the frame 12.

The pump housing 14 is mounted to the end of the frame 12 at an acute angle thereto.

As shown in Fig. 6, the pump housing 14 includes an impeller 18 fixed to a shaft 24 which is journaled in bearings 20 of impeller casing 28 and bearings 21 in the frame 12. A cutting wheel 26 in the form of a multi-bladed propeller is mounted to the bottom end of shaft 24. The impeller casing 28 communicates with the pipe 30 for discharging liquid from the pump housing 14. A pair of support plates 22 mounts the impeller casing 28 to the frame 12.

A shaft 32 is mounted in the same axis as the shaft 24 but on the opposite side of the frame 12 and extends upwardly from the pump housing 14. The shaft 32 mounts a spiral screw pump 40. It is contemplated that other thrust means could be provided, such as a multi-blade propeller. The shaft 32, which is journaled in bearings 33 in the frame 12, mounts bevel gear

38a which in turn meshes with bevel gear 38b on the end of drive shaft 34. Likewise, the shaft 24 mounts a bevel gear 38c which meshes with the bevel gear 38b.

The frame 12 is hollow and is formed by a rectilinear cylinder 54 which is sealed throughout. The cylinder 54 is provided with a lubricating oil in its interior, and this oil is prevented from escaping from the cylinder 54 by means of sealed bearings, etc. The axis of the shafts 24 and 32 is at an acute angle to the longitudinal axis of frame 12. The range of angles is preferably between 30° and 45°. The purpose of having the axis of the shafts 24 and 32 at an acute angle to the frame 12 will become evident as will be described hereinbelow.

The shaft 34 extends throughout the cylinder 54 and is connected at a universal joint 36 in the elbow of the angled portion of the frame 12.

The discharge pipe 30 communicates with either a drainage pipe 52 or a diversion pipe 46, depending on the position of the valve 42. The valve 42 can be either in a position to allow the liquid to pass through the diversion pipe 46 to the nozzle 48, or alternatively to the drainage pipe 52 to be loaded outboard of the pond P when in operation.

The valve 42 is controlled by hydraulic control 44.

A nozzle 48 is at right angles to the diversion pipe 46 and is rotated by means of a rotary cable 50 operated by a hydraulic motor associated with the cable 50.

The other end of the drive shaft 34 is coupled to a drive shaft 56, off a typical tractor vehicle V. The frame 12 is detachably connected to the

vehicle V by means of a hitch 58. A drain pipe 52 is supported on the frame 12 at its outby end by means of a support 66 which may be hydraulically extendable.

The frame 12 may, in one embodiment, be cantilevered to the end of the tractor V, and in such a case, hydraulic cylinders would be provided for lifting the cantilevered frame in and out of the pond.

A preferred embodiment is shown in the drawings which includes a sub-frame 16 which is pivoted to a pivot bracket 72 on the frame 12. The sub-frame 16 may be in the form of a pair of parallel legs which are bent at 74 and at 76. Wheels 60 are mounted on the sub-frame 16, and a hydraulic ram 64 is mounted to a bracket 68 on the frame 12 which operates the dog-leg lever 62 fixed to the sub-frame 16 at the pivot point 76.

Figs. 1 to 4 show the successive operative positions of the agitator and pump assembly 10. Fig. 1 shows the apparatus 10 in its transport position. It will be noted that a set of wheels 60 is provided in the area of the bent portion 74 of the legs forming the sub-frame 16 and have been removed from the wheel mounting 70.

The frame 12 can be mounted to the rear of a lightweight vehicle, such as a pickup truck or even an automobile, for road transport. When it is required to drain a pond typically filled with animal manure, the wheels 60 are moved away from the bent portion 74 and are mounted to the wheel mounting 70 at the end of the legs forming the sub-frame 16, and the vehicle is made to advance the apparatus 10 towards the pond P as shown in Fig. 2.

As illustrated in Fig. 3, the agitator and pump assembly 10 is backed until the rear wheels 60 are on the edge of the pond P, at which point the vehicle

is halted. The ram 64 is then operated to move lever 62 counterclockwise until the front wheels 60 break through the crust formed on the liquid in the pond and engage the floor of the pond P as shown in Fig. 4. The vehicle V is then made to move backwards further as the sub-frame is supported by the lower wheels 60, and then the ram is actuated to allow the pump housing 14 on the frame 12 to be lowered into the pond P by pivoting about the hitch 58.

Fig. 5 illustrates a position wherein the pump housing 14 is nearer the bottom of the pond P. The frame 12 and pump housing 14 can be lowered to approximately 6 inches from the bottom of the pond P. The pump is then actuated by means of drive shaft 34 so that both the impeller 18 and the screw 40 are rotated. The screw 40, by rotating, draws the liquid and portions of the crust downwardly against the pump housing, and the impeller 18 sucks the liquid from the bottom to pump the liquid through the pipe 30. The multi-bladed cutting device 26 will shred hay and other debris in order to allow the liquid material to pass through the impeller 18 and pipe 30. At the beginning of an operation, the liquid will be diverted through the diversion pipe 46 through the nozzle 48 which will be forced back into the pond P. However, by controlling the angle of the nozzle 48, the operator can help to break up the crust which is normally at the surface of the pond over the liquid. At the same time, the recirculation of the liquid through the impeller 18, diversion pipe 46, and nozzle 48, causes the solid particles to be broken up into smaller pieces, thereby rendering the material more liquefied.

Once the liquid manure is of a suitable consistency, the valve control 44 will be operated to change the position of the valve 42 and divert the

liquid from pipe 30 through to drain pipe 52 which will be connected up to a liquid storage tank on a vehicle which will then be utilized to transport and spread the manure on fields.

As can be seen from the drawings, the acute angle of the shaft as relative to the frame 12 enables the apparatus to be used in shallow ponds P and at different levels of the pond P with the screw 40 substantially vertical. It is understood that the axis will not be exactly vertical, but the thrust will cause the flow to move downwardly towards the pump housing 14, and the impeller 26 can be made to approach the bottom of the pond P. A protecting bar 78 will be provided underneath the impeller casing to support the casing on the bottom floor and prevent the cutting wheel 26 from being damaged.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An agitator and pump assembly comprising an elongated frame member having a longitudinal axis, a pump housing mounted at one end of the frame, a bladed impeller mounted for rotation about a rotation axis in the pump housing, means provided for mounting the other end of the elongated frame to a transport vehicle in an articulated manner, means are provided for supporting and locating the elongated frame in a manure pond including a sub-frame pivotally mounted at one end to the elongated frame intermediate the ends of the elongated frame, runner means provided on the sub-frame at least at the free end thereof, and positive motor means extending between the elongated frame and the sub-frame for pivoting the sub-frame relative to the elongated frame when the runner means are in contact with the bottom of the manure pond.

2. An agitator and pump assembly as defined in claim 1, wherein the impeller rotation axis extends at an angle of between 30° and 45° from the longitudinal axis of the frame.

3. An apparatus as defined in claim 1, wherein the runner means are wheels provided at least at the other end of the sub-assembly from the pivotal mount of the sub-frame to the elongated frame.

4. An apparatus as defined in claim 3, wherein the sub-frame is an elongated dog-leg frame with the wheels mounted at each end thereof, and a lever is provided at one end of the sub-frame near the pivot mount of the sub-frame with the elongated frame and a hydraulic ram means is provided for activating the lever means such that the sub-frame can be rotated at an an-

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gle to the elongated frame to position the pump housing at different vertical attitudes within the pond.

5. An agitator and pump assembly comprising an elongated first frame member having a longitudinal axis, a pump housing mounted at one end of the first frame, a bladed impeller mounted for rotation about a rotation axis in the pump housing, the impeller rotation axis extending at an angle of between 30° and 45° from the longitudinal axis of the frame, means provided for mounting the other end of the frame to a transport vehicle, including second frame means to which the first frame is articulated, and means are provided for moving the first frame relative to the second frame to change the angular disposition of the first frame thereto, a third frame pivotally mounted at one end to the elongated first frame member, wheel means provided on the other end of the third frame member, positive means for controlling the angle of the third frame relative to the elongated first frame when the wheel means are in contact with the bottom of a manure pond, such that the third frame supports the first frame member at different angular positions with the pump housing in the pond.

6. An apparatus as defined in claim 5, wherein the third frame is an elongated dog-leg frame with the wheel means mounted at each end thereof, and a lever is provided at one end of the third frame at the pivot point with the first frame, and hydraulic ram means are provided for activating the lever means such that the third frame can be angled relative to the elongated first frame to position the pump housing at different vertical attitudes within the pond.

7. An apparatus as defined in claim 5, wherein the pump housing includes a pipe extending on the first

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frame, from and communicating with the impeller such that liquid is pumped from the impeller through said pipe to alternatively: a recirculating nozzle, or a drainage pipe which carries the material outboard of a pond.

8. An apparatus as defined in claim 5, wherein a bladed thrust means in the form of a screw conveyor extends in a spiral on a shaft with the shaft extending in the axis of rotation of the impeller and is connected thereto and extends along the first frame.



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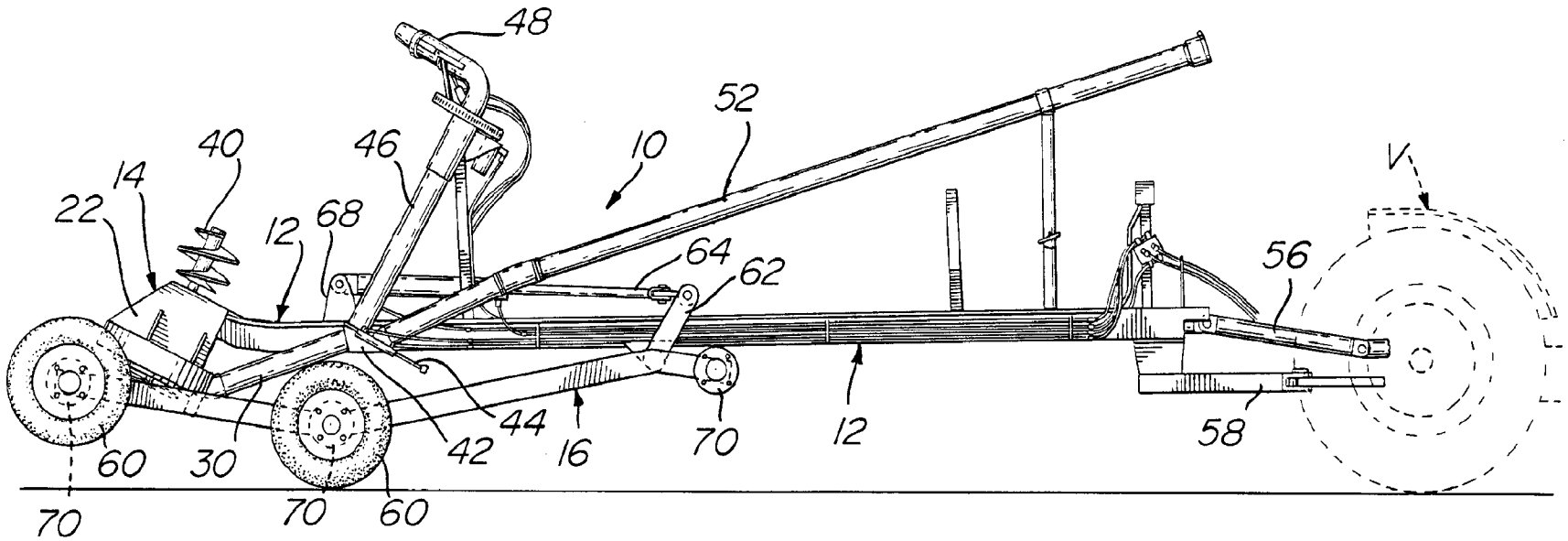


FIG. 1

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PATENT AGENTS

Dowbrey Ogilvy Renault

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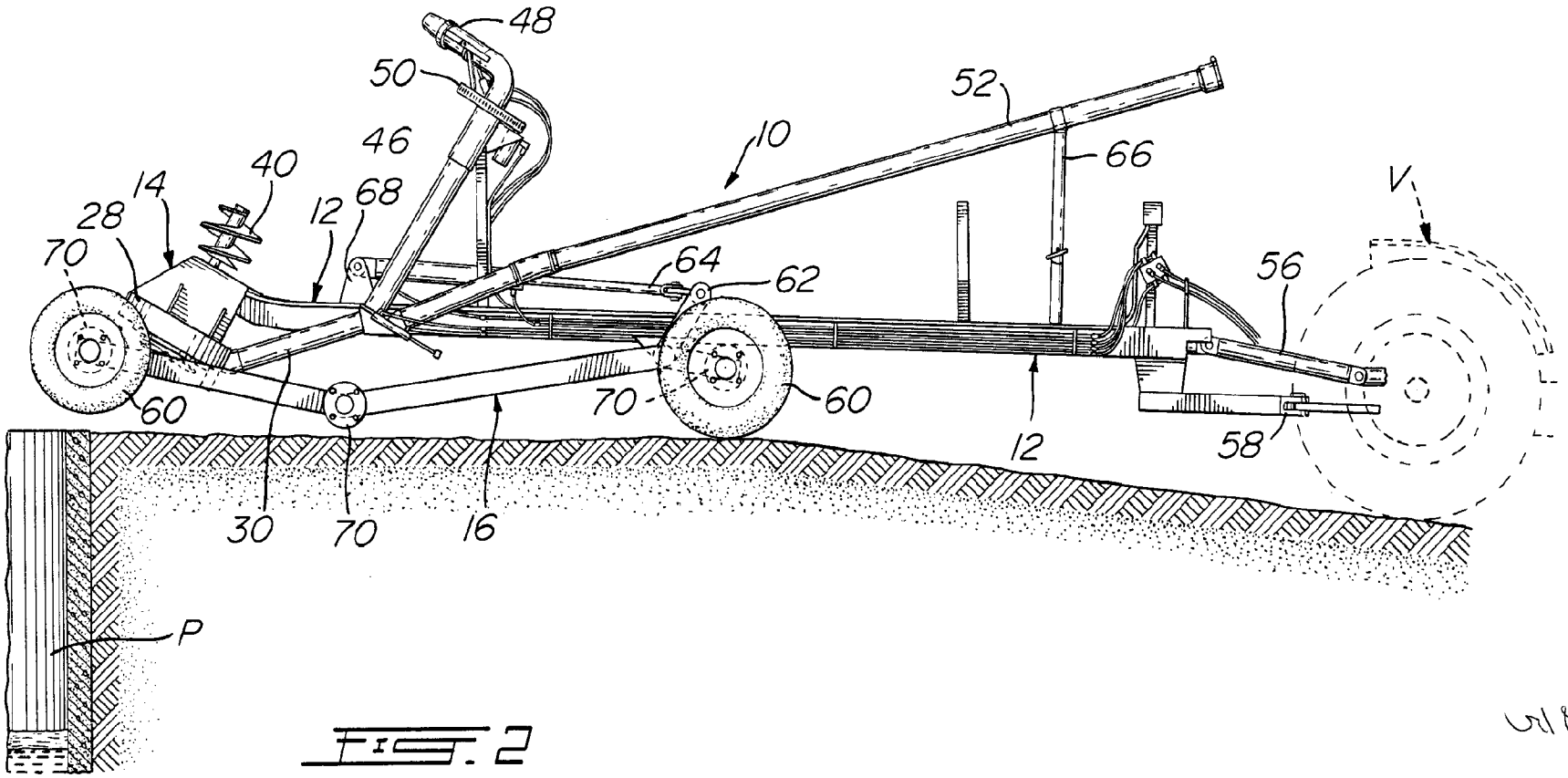


FIG. 2

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PATENT AGENTS

Swabey Ogilvy Renault

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FIG. 3

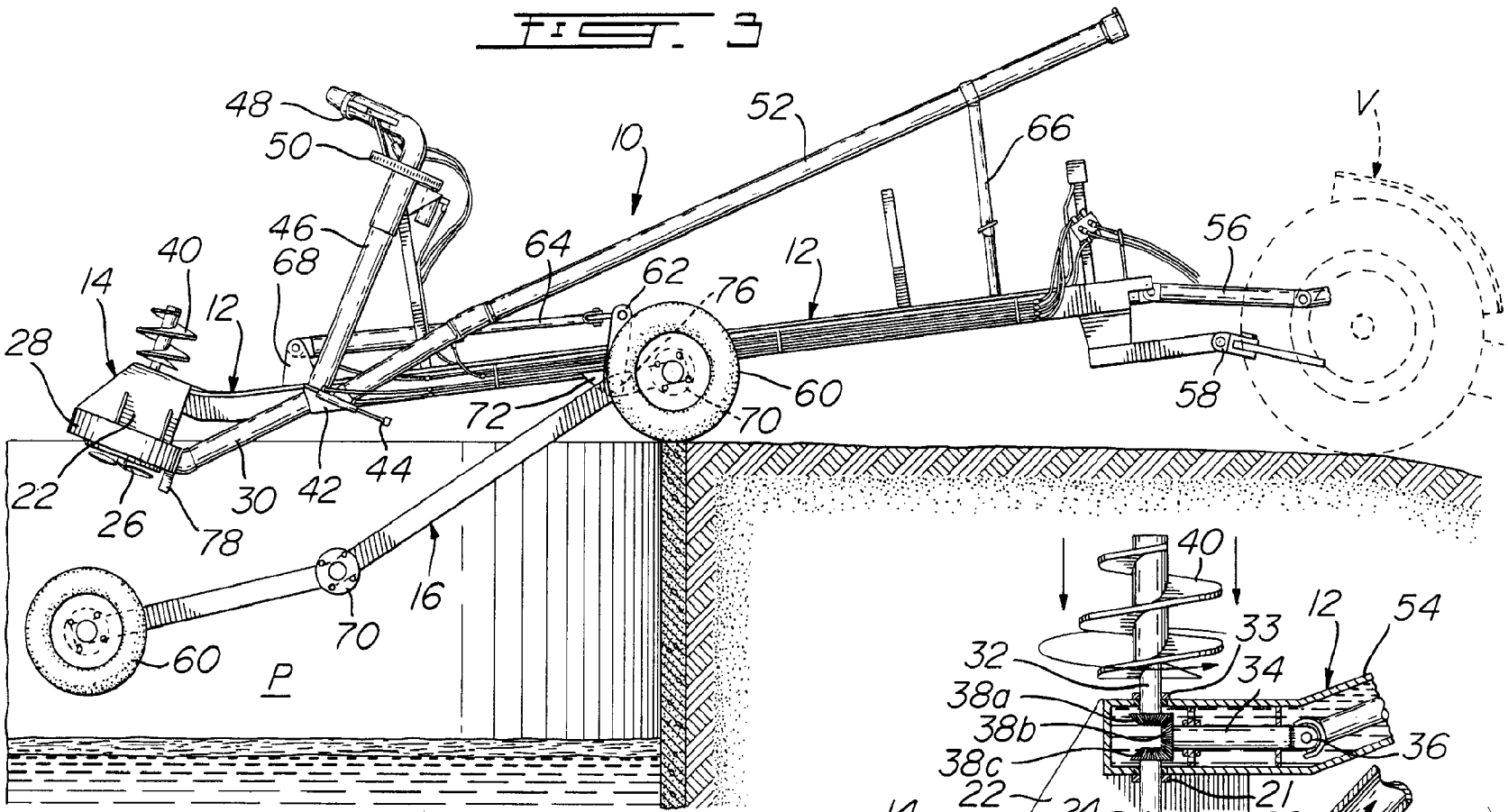


FIG. 6

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Swabey Ogilvy Renault

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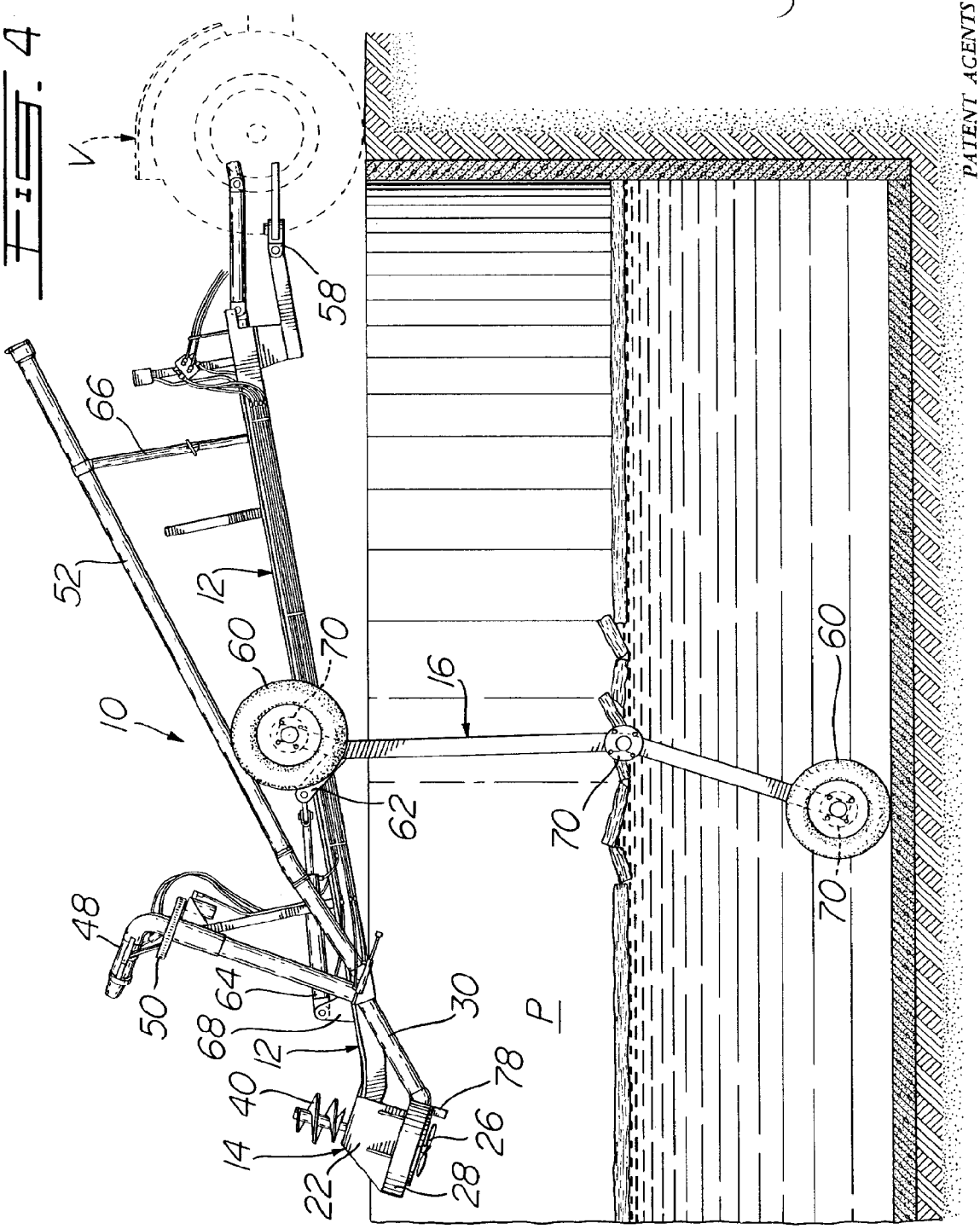
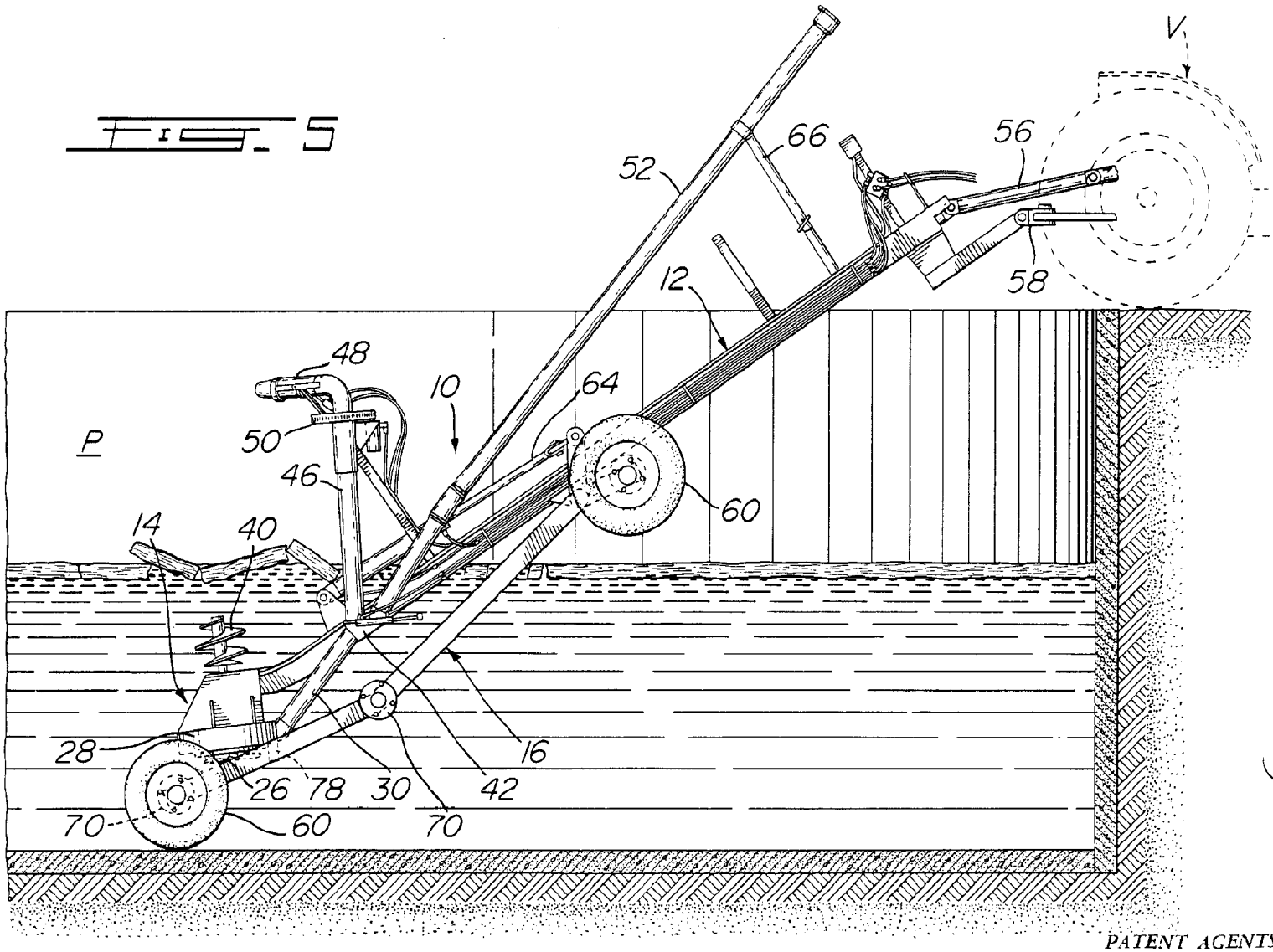


Fig. 4

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Rowley Oglivy Kenrick

FIG. 5



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Swabey Ogilvy Renault

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Espacenet

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Agitator device for liquid-manure containers

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Classification: **- international:** ***A01C3/02; B01F13/00;*** (IPC1-7): A01B59/043; A01B63/10; A01C3/02

- cooperative: **A01C3/026**; **B01F13/0035**

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Priority number (s): DE19843431345 19840825

Abstract of DE3431345 (A1)

What is described is an agitator device for liquid-manure containers, in which the agitator is connected to a motor which can be driven by the engine of a vehicle via a power take-off shaft. The drive consists of a hydraulic drive with a hydraulic pump and a hydraulic motor, the hydraulic pump drivable by the power take-off shaft to the vehicle engine being fastened releasably to the vehicle, and the hydraulic motor movable relative to this carrying the agitator and being couplable to the hydraulic pump by means of hose lines.

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DESCRIPTION DE3431345

Stirring device for slurry tank

The invention relates to stirrers for slurry containers according to the generic concept of patent claim 1.

The drive of the agitator is known to be such devices by means of an electric motor designed as an immersion motor. Stirrers which are movably suspended on a carrier in the slurry container on fixedly mounted holders, for example on a winch, are widely used so that the stirrer can operate at different depths of the slurry container. Such agitators operate predominantly in fixed gill pits, I.B: on the premises of a farm, a breeding center for cattle. An existing power connection is essential for the operation of the stirrer, so that in each individual case of the use of such stirrers the laying of an electrical connecting line is necessary. A separate agitator must be provided for each slurry tank. However, transportable stirring devices are also known, which can be attached with special precautions to the hydraulic lifting mechanisms of a tractor used for agriculture or the like and whose drive is ultimately effected via an electric motor or directly through the power take-off connection of the tractor or the like.

Although such agitators can be converted from one slurry container to another slurry container, the drive is dependent on the presence of an electrical connection or has to be carried out by coupling the stirrer shaft to the tipper shaft of the tractor.

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However, the latter type of drive is associated with the disadvantage that the agitating device can only be inserted into the slurry container with a flat inclination angle.

On the other hand, it is the object of the invention to design a stationary stirring device in such a way that it can be operated independently of drive energy to be transported via lines, and can also be inserted and operated independently of a force source supplying drive energy into the liquid manure container.

According to the invention, this object is achieved by means of training features according to the characterizing clause of patent claim 1.

By using a hydraulic drive according to the invention from a hydropump and a hydromotor, the stirring device becomes completely independent of the electric drive energy.

The disadvantages of the previously uncontrolled type of drive directly above the tipper shaft of a tractor are also overcome.

On the rotor shaft of the hydromotor, the stirring tool, *** "

A twin or multi-leaf impeller, a propeller or the like, while the hydropump is connected to the tractor's tipper shaft or the like independently of the position and location of the hydromotor. A hose line adapted in length to the conditions serves to connect the hydropump to the hydromotor.

According to a particular embodiment of the invention, it is provided that the hydropump with its auxiliary devices, in particular with an U-shaped container, an U-filter, etc., as a fixed unit, *** "

Is formed in a carrier which can be hooked into the hydraulics of a tractor used for agriculture so that the pump rotor can be coupled directly to the tractor's tipper shaft. For the design of the stirrer itself, an elongated rod-shaped design is recommended in a manner known per se which carries the agitator at one end so that the stirrer can be lowered into different depths of the slurry container and can also be moved in the slurry container to effect the circulation Of the manure in

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the container in effect.

In such a configuration, the hydromotor can also be arranged at some distance from the agitating tool on the carrier of the agitator, a connecting shaft connecting the rotor of the hydromotor to the shaft of the agitator. As a result, the hydromotor can not be immersed in the liquid manure. Particularly suitable for the attachment of the hydromotor and its auxiliary devices as well as the agitator are the hydraulic lifting devices customary in agricultural tractors, in particular the lifting device present at the rear, with a three-point linkage and the front-side lifting device in the design of a front loader.

An exemplary embodiment of the invention is schematically illustrated in the drawing. FIG. 1 is a side view of a tractor with the stirring device, and FIG. 2 is a rear view of the pump part of the stirring device.

A tractor 1 with a front loader which has vertically movable lifting arms 2 and a rear lifting hydraulic system comprising a linkage 3 and 4 with a three-point linkage, of which the upper linkage point is arranged centrally over two articulation points 6 lying at the same level. The pump part of the stirring device is arranged on a carrier 7 which has two bearing pins 8 for the connection in the articulation points 6 with the linkage 3 and a fork 9 for the connection at the articulation point 5 with the linkage 4 of the tractor hydraulics. The hydraulic pump 11 is arranged on an inner container 10 in the frame 7, the suction nozzle 12 of which projects into the container 10. The hose line marked with dash-dotted lines 14 can be connected to the pressure connection 13 of the pump 11 to the hydropump. Return is indicated by dashed-dotted lines 15. This line leads from the hydromotor to an ultrafilter 16 in the region of the ultrasound 10. The hydromotor 17 is attached to a carrier 18 and is connected via its rotor shaft 19 to the stirrer 20, which is designed, for example, as a bucket wheel, propeller or the like.

The carrier 18 of the hydromotor 17 is advantageously arranged in a height-adjustable manner in a holder 21 which, in turn, is connected to the free ends of the arms 2 of the front loader. For the transport position, the carrier 18 can be held by means of a tab 22 in the front trailer coupling 23 of the tractor 1. The feed line 14 and the return line 15 for the hydromotor 17 can be connected to corresponding connecting branches 24 and 25 of known quick couplings. In the depicted position, the hydromotor can be moved with the agitator 20 by moving the arms 2 of the front loader än anywhere in a slurry tank. By means of auxiliary devices known per se, the stirrer 20 can also be moved in the horizontal direction in the slurry tank. The agitator 2 is driven via the hydromotor 17, which is fed by the hydropump 11 via the lines 14 and 15. The hydropump 11 is driven via the pinion shaft 26 of the tractor 1.

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It can be seen that the stirrer can be inserted at any point in a slurry tank at any location. The assembly and disassembly can be carried out by means of the commercially available plug-in connections on the holder 21 or on the articulation points 5 and 6 as well as the pto shaft 26 with a few hand movements.

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CLAIMS DE3431345

Stirrer for slurry containers Patent claims 1. A stirrer for slurry containers, in which the agitator is connected to a motor which can be driven by a drive motor of a vehicle via a power take - off shaft, characterized in that the agitator (20) comprises a hydraulic drive from a hydropump (11) and a hydromotor (17) Of the hydropump (11), which is drivable on the vehicle (1), is connected to the agitator (20) by means of a hose line (14, 15) with the hydropump (11) by means of a hose line (14, 15) .

2.

Stirrer device according to claim 1, characterized in that the housing of the hydropump (11) can be suspended in the hydraulics of a tractor (1) which can be used for agriculture, and the pump rotor can be mechanically coupled to the power take-off shaft (26) of the tractor (1).

3.

A stirring device on a transportable carrier according to claims 1 and 2, characterized in that the carrier (18) can be fastened to the tractor (1) for transport.

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4.

A stirring device according to claim 3, characterized in that the carrier (18) is provided with a three-point linkage (5, 6) with the support of the tractor hydraulics, in particular with a front loader (2), and a further carrier (7) for the hydraulic pump (11) A lifting hydraulics arranged on the rear side.

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gleich Anmelder

(54) Rührvorrichtung für Güllebehälter

Es wird eine Rührvorrichtung für Güllebehälter beschrieben, bei der das Rührwerk mit einem vom Antriebsmotor eines Fahrzeugs über eine Zapfwelle antreibbaren Motor verbunden ist. Der Antrieb besteht aus einem hydraulischen Antrieb mit einer Hydropumpe und einem Hydromotor, wobei die von der Zapfwelle des Fahrzeugmotors antreibbare Hydropumpe lösbar am Fahrzeug befestigt ist und der demgegenüber ortsveränderliche Hydromotor das Rührwerk trägt und mit der Hydropumpe mittels Schlauchleitungen kuppelbar ist.

DE 3431345 A1

Rührvorrichtung für Güllebehälter

Patentansprüche

1. Rührvorrichtung für Güllebehälter, bei der das Rührwerk mit einem vom Antriebsmotor eines Fahrzeugs über eine Zapfwelle antreibbaren Motor verbunden ist, dadurch gekennzeichnet, daß das Rührwerk (20) einen hydraulischen Antrieb aus einer Hydropumpe (11) und einem Hydromotor (17) aufweist, dessen von der Zapfwelle (26) des Fahrzeugmotors antreibbare Hydropumpe (11) am Fahrzeug (1) lösbar befestig ist und dessen mittels einer Schlauchleitung (14,15) mit der Hydropumpe (11) kuppelbarer Hydromotor (17) mit dem Rührwerk (20) verbunden ist.

2. Rührvorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das Gehäuse der Hydropumpe (11) in die hydraulik eines landwirtschaftlich nutzbaren Schleppers (1) einhängbar und der Pumpenläufer mechanisch mit der Zapfwelle (26) des Schleppers (1) kuppelbar ist.

3. Rührvorrichtung an einem transportablen Träger nach den Ansprüchen 1 und 2, dadurch gekennzeichnet, daß der Träger (18) zum Transport am Schlepper (1) befestigbar ist.

4. Rührvorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß der Träger (18) mit der Halterung der Schlepperhydraulik, insbesondere mit einem Frontlader (2), und ein weiterer Träger (7) für die hydraulische Pumpe (11) mit einer Dreipunktanlenkung (5,6) einer heckseitig angeordneten Hubhydraulik verbunden sind.

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Rührvorrichtung für Güllebehälter

Die Erfindung betrifft Rührvorrichtungen für Güllebehälter nach dem Gattungsbegriff des Patentanspruches 1.

Bekannt ist der Antrieb des Rührwerkes solches Vorrichtungen durch einen als Tauchmotor ausgebildeten Elektromotor. Weithin gebräuchlich sind Rührvorrichtungen, die an einem Träger im Güllebehälter an fest installierten Haltern beweglich aufgehängt sind, zum Beispiel an einer Winde, so daß die Rührvorrichtung in unterschiedlichen Tiefen des Güllebehälters arbeiten kann. Solche Rührvorrichtungen arbeiten vorwiegend in festen Güllegruben, z.B. auf dem Gelände eines landwirtschaftlichen Betriebes, einer Zuchtanstalt für Vieh. Für den Betrieb der Rührvorrichtung ist ein vorhandener Stromanschluß unerläßlich, so daß in jedem Einzelfalle des Einsatzes solcher Rührvorrichtungen die Verlegung einer elektrischen Anschlußleitung erforderlich ist. Für jeden Güllebehälter ist eine eigene Rührvorrichtung vorzusehen. Bekannt sind jedoch auch transportable RÖhrvorrichtungen, die mit besonderen Vorkehrungen in die hydraulischen Hubwerke eines landwirtschaftlich genutzten Schleppers oder dergleichen eingehängt werden können und deren Antrieb endweder

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über einen Elektromotor oder unmittelbar durch den Zapfwellenanschluß des Schleppers oder dergleichen erfolgt. Solche Rührvorrichtungen können zwar von einem in einen anderen Güllebehälter umgesetzt werden, der Antrieb ist jedoch von dem Vorhandensein eines Elektroanschlußes abhängig oder muß durch Kupplung der Rührwerkswelle mit der Zapfwelle des Schleppers erfolgen. Letztere Antriebsart ist jedoch mit dem Nachteil verbunden, daß die Rührvorrichtung nur mit einem flachen Neigungswinkel in den Güllebehälter eingeschoben werden kann.

Demgegenüber ist es Aufgabe der Erfindung, eine ortsveränderliche Rührvorrichtung in der Weise auszubilden, daß sie unabhängig von über Leitungen zu transportierende Antriebsenergie betrieben werden kann und auch unabhängig von einer Antriebsenergie liefernden Kraftquelle in den Güllebehälter eingesetzt und betrieben werden kann.

Erfindungsgemäß wird diese Aufgabe durch Ausbildungsmerkmale nach dem Kennzeichen des Patentanspruches 1 gelöst.

Durch die Verwendung eines hydraulischen Antriebes gemäß der Erfindung aus einer Hydropumpe und einem Hydromotor wird die Rührvorrichtung von elektrischer Antriebsenergie vollkommen unabhängig. Auch die Nachteile der bisherigen ortsungebundenen Antriebsart unmittelbar über die Zapfwelle eines Schleppers sind überwunden. Auf der Läuferwelle des Hydromotors wird das Rührwerkzeug, z. B. ein zwei- oder mehrflügeliges Schaufelrad, ein Propeller oder dergleichen, angeordnet, während die Hydropumpe unabhängig von Lage und Ort des Hydromotors an die Zapfwelle des Schleppers oder dergleichen angeschlossen wird. Eine in der Länge den Verhältnissen angepasste Schlauchleitung dient zur Verbindung der Hydropumpe mit dem Hydromotor.

Nach einer besonderen Ausführungsform der Erfindung ist vorgesehen, daß die Hydropumpe mit ihren Hilfseinrichtungen, insbesondere mit einem Ölbehälter, einem Ölfilter usw. als eine feste Einheit, z. B. in einem Träger ausgebildet ist, der in die Hydraulik eines landwirtschaftlich genutzten Schleppers einhängbar ist, so daß

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der Pumpenläufer unmittelbar mit der Zapfwelle des Schleppers kuppelbar ist. Für die Ausbildung des Rührwerkes an sich empfielt sich eine langgestreckte stabförmige Ausbildung in an sich bekannter Weise, die an dem einen Ende das Rührwerkzeug trägt, so daß dieses in unterschiedliche Tiefen des Güllebehälters abgesenkt und gegebenenfalls in dem Güllebehälter auch bewegt werden kann, um die Umwälzung der Gülle in dem Behälter in der Wirkung zu unterstützen. Bei einer solchen Ausbildung kann der Hydromotor auch mit einigem Abstand von dem Rührwerkzeug an dem Träger des Rührwerkzeugs angeordnet sein, wobei eine Verbindungswelle den Läufer des Hydromotors mit der Welle des Rührwerkes verbindet. Dadurch kann erreicht werden, daß der Hydromotor nicht in die Gülle eintaucht. In besonderer Weise geeignet für die Befestigung des Hydromotors und seiner Hilfseinrichtungen sowie des Rührwerkes sind die bei landwirtschaftlich genutzten Schleppern gebräuchlichen hydraulischen Hubvorrichtungen, insbesondere die heckseitig vorhandene Hubvorrichtung mit einer Dreipunktanlenkung und die frontseitige Hubvorrichtung in der Gestaltung eines Frontladers.

Ein Ausführungsbeispiel der Erfindung ist auf der Zeichnung schematisch dargestellt. Es zeigen:

Figur 1 eine Seitenansicht eines Schleppers mit der Rührvorrichtung und

Figur 2 eine Rückansicht des Pumpenteils der Rührvorrichtung.

An einem Schlepper 1 mit einem Frontlader, der vertikal bewegliche Hubarme 2 aufweist, und einer Heckseitigen Hubhydraulik aus einem Gestänge 3 und 4 mit Dreipunktanlenkung, von denen der obere Anlenkpunkt mittig über zwei auf gleicher Höhe liegenden Anlenkpunkten 6 angeordnet ist. Der Pumpenteil der Rührvorrichtung ist auf einem Träger 7 angeordnet, welcher zwei Tragzapfen 8 für die Verbindung in den Anlenkpunkten 6 mit dem Gestänge 3 und eine Gabel 9 für die Verbindung im Anlenkpunkt 5 mit dem Gestänge 4 der Schlepperhydraulik aufweist. Auf einem Ölbehälter 10 in dem Gestell 7 ist die hydraulische Pumpe 11 angeordnet, deren Saugstutzen 12 in den Behälter 10 hineinragt. An den Druckstutzen 13 der Pumpe 11

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ist die mit strichpunktierten Linien 14 markierte Schlauchleitung zu der Hydropumpe anschließbar. Die Rückleitung ist mit strichpunktierten Linien 15 angedeutet. Diese Leitung führt vom Hydromotor zu einem Ölfilter 16 im Bereich des Öltanks 10. Der Hydromotor 17 ist an einem Träger 18 befestigt und ist über ihre Läuferwelle 19 mit dem Rührwerk 20 verbunden , welches zum Beispiel als Schaufelrad, Propeller oder dergleichen ausgebildet ist. Der Träger 18 des Hydromotors 17 ist vorteilhaft höhenverstellbar in einem Halter 21 angeordnet, der seinerseits mit den freien Enden der Arme 2 des Frontladers verbunden ist. Für die Transportstellung kann der Träger 18 mittels einer Lasche 22 in der vorderen Anhängekupplung 23 des Schleppers 1 festgehalten werden. Die Vorlaufleitung 14 und die Rücklaufleitung 15 für den Hydromotor 17 sind an entsprechende Anschlußstutzen 24 und 25 mittel bekannter Schnellkupplungen anschließbar. In der gezeichneten Stellung kann der Hydromotor mit dem Rührwerk 20 durch Bewegung der Arme 2 des Frontladers an jede beliebige Stelle in einem Güllebehälter bewegt werden. Durch an sich bekannte Zusatzeinrichtungen kann das Rührwerk 20 auch in horizontaler Richtung im Güllebehälter bewegt werden. Der Antrieb des Rührwerkes 2 erfolgt über den Hydromotor 17, welcher durch die Hydropumpe 11 über die Leitungen 14 und 15 gespeist wird. Die Hydropumpe 11 wird über die Zapfwellle 26 des Schleppers 1 angetrieben. Man erkennt, daß das Rührwerk ortsungebunden an jeder beliebigen Stelle in einen Güllebehälter eingesetzt werden kann. Die Montage und Demontage ist durch die handelsüblichen Steckverbindungen an dem Halter 21 bzw. an den Anlenkpunkten 5 und 6 sowie der Zapfwelle 26 mit wenigen Handgriffen durchführbar.

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- Leerseite -

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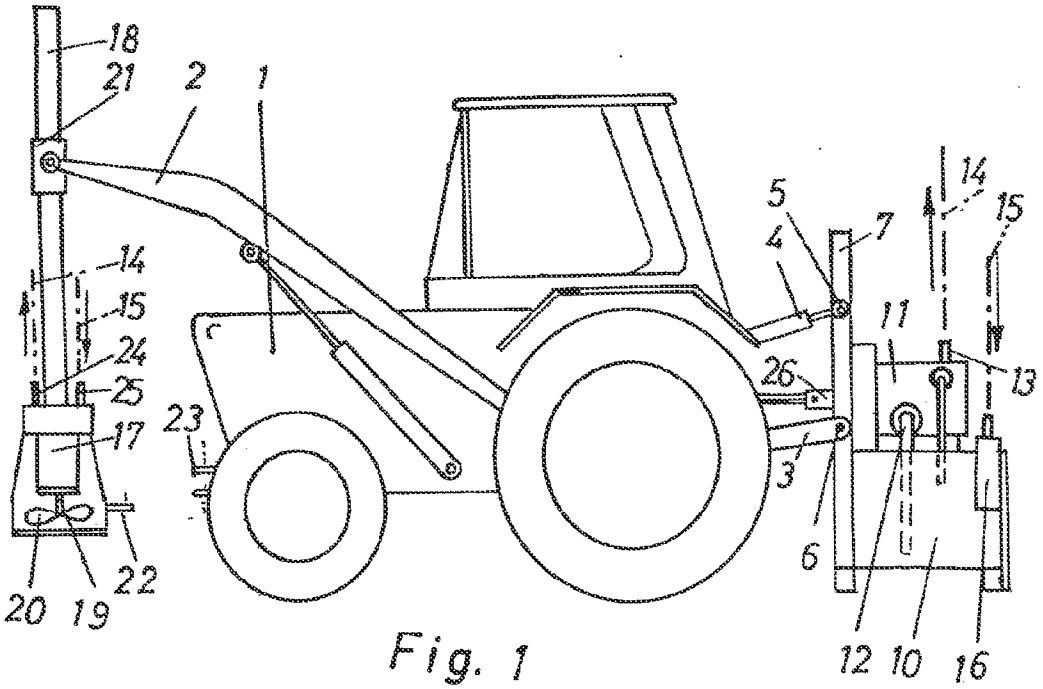


Fig. 1

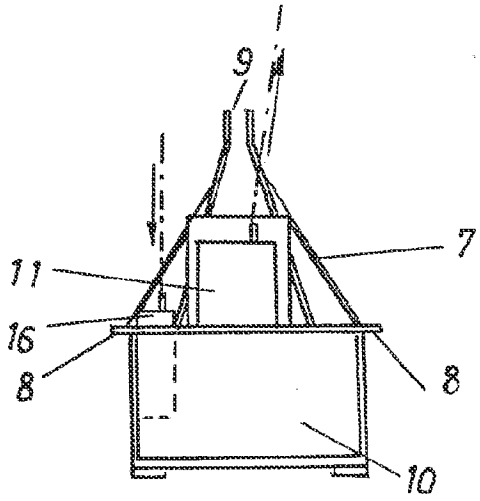


Fig. 2

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Espacenet

Bibliographic data: DE2364962 (A1) — 1975-07-03

VORRICHTUNG ZUM AUFBEREITEN UND FOERDERN VON DICKSTOFFEN ENTHALTENDEN FLUESSIGKEITEN

Inventor(s): KRONSEDER JOSEF ± (KRONSEDER, JOSEF, 8313 VILSBIBURG)

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Classification: **- international:** ***A01C3/02; B01F13/00; F04D29/60;*** *B01F7/00;* (IPC1-7): F04D7/04
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DESCRIPTION DE2364962

[0001]

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[0002]

8 MUNICH 40, the 23.12.1973 DBGENBBLDSTRASSE lo TBLEPON 3001352.

[0003]

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[0004]

APPLICATION: MEINB AKTE 2334 / P

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[0005]

YOUR SIGN:

[0006]

Josef Kronseder, 8313 Vilsbiburg

[0007]

Apparatus for the preparation and delivery of fluids containing liquids.

[0008]

The invention relates to a device for the preparation and conveyance of fluids containing liquids, in particular liquid manure.

[0009]

The removal of liquid manure or the like, From seat pits is still very difficult, as the solids present in the liquid settle on the bottom of the pit.

[0012]

And are very difficult to eliminate.

It can be observed again and again that the solids are carefully applied after the liquid has been pumped out with the blade.

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[0013]

Pumps have already been disclosed which are equipped with a separate cutting device for the thick substances, but such pumps only detect the directly adjacent boundary regions of the jaws while the more remote regions remain unaffected.

[0014]

In order to avoid the described disadvantages, a device for the preparation and delivery of fluids containing liquids is proposed. According to the invention, this comprises a boom, which comprises a pump which can be driven by means of a gearing, a Mii wheel which can be plugged onto the pump shaft and a nozzle connected to the delivery tube of the pump Directional three-way valve.

[0015]

A device of this type allows the liquid to be stirred beyond the pure pumping out process by means of the mixing wheel, with the possible simultaneous cutting of thick substances, B0Stroh, and with the help of the pump and the nozzle, whereby the thick materials are whirled up and can not settle.

[0017]

ORfGiNAL INSPECTED

[0018]

Since a higher speed is required for the operation of the pump and the nozzle than for the

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operation of the mixing wheel, the transmission is equipped with two PTO shafts and an output shaft (pump shaft) and is designed such that the pump shaft rotates at different speeds with the same input speed of the PTO shafts .

[0019]

In order to equip the gate direction for the tractor operation, the outrigger can be swiveled out on a! Which can be coupled to the trailer coupling of the pickup truck.

[0020]

Further details of the door direction can be derived from the drawing, in which an exemplary embodiment of the subject matter of the invention is shown in the side view.

[0021]

The gate direction shown essentially consists of a cantilever 1, which is braced by means of bolts 3 on a carrier 4 via two plates 2, only the front of which can be seen. The inclination angle of the cantilever 1 opposite the carrier 4 can be changed by means of a positioning spindle 5. The carrier 4 can be attached to the trailer coupling & bgr; Of the tractor 7 in such a way that tr can be pivoted upwards, as shown in dashed lines in the drawing "

[0022]

To enable swiveling, insert on plate 2

[0024]

Lever 8, on which, in turn, the piston rod 9 of a hydraulic working cylinder 10 engages.

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[0025]

The boom has two tubes 11, 12 which are attached at the top to the housing of the transmission 11 and at the bottom to the housing of the pump 14. Two power take-off shafts 15, 16 are provided on the transmission, which can be selectively connected to the power take-off shaft 18 of the tractor by means of an articulated shaft 17. The pump shaft 19, on which the Miyrad 20 can be mounted, is located in the tube 11. The tube 12 serves as a delivery tube and for this purpose is equipped with an outlet connector 21, a three-way valve 22 and a nozzle 23.

[0026]

If the tractor 7 is located on the 4-way pit 24, and the boom 1 dips through the pit hole 25 into the dead manhole 26, the following possibilities are obtained:

[0027]

1. Crushing.

[540]

The power take-off shaft 15 of the transmission 13 is connected to the power take-off shaft 18 of the tractor 7. The three-way valve 22 is closed, the mixing wheel 20 is pushed onto the pump shaft 19 and its bearing shell 27 is clamped to the housing of the pump 14. The Mix wheel runs with approx. 540 Rpm, and the slurry 26 is agitated, with coarse ropes being separated from the mixing wheel.

[0030]

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2.

Stir.

[0031]

The power take-off shaft 16 of the transmission 13 is connected to the power take-off shaft 18 of the tractor 7, The three-way valve 22 is adjusted so as to provide a connection from the pump 14 to the nozzle 23. The pump 14f, which now circulates with ca., 1,350 ü / mim, thus sucks! And then presses it back into the liquid manure 26 under high pressure through the nozzle 23.

[0032]

3. Pump.

[0033]

The power take-off shaft 16 of the transmission 13 remains connected to the power take-off shaft 18 of the tractor 7. The three-way valve 22 is adjusted so that a connection from the pump H to the outlet nozzle 21 is established. The pump 14 thus conveys the effluent 26 out of the pit 28 through the outlet connection 21. In this way,

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CLAIMS DE2364962

Claims

(1), which comprises a pump (14) drivable via a gear (13), a Miirad (20) which can be slipped onto the pump shaft (19), a pressure - reducing device (23) connected to the delivery pipe (12) of the pump (14) and a three-way valve ('22) controlling the pump (14).

2.

(15, 16) and an output shaft (pump shaft) 19 and is designed in such a way that, at the same input speed of the power take-off shafts (15, 16), the pump shaft (19,) At different speeds.

3.

A door direction according to claims 1 to 3, characterized in that the boom (1) is pivotally pivoted on a carrier (4) which can be coupled to the trailer coupling (6) of a tractor (7).

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4.

Apparatus according to claim 3? Characterized in that a positioning spindle (5) is provided between the boom (1) and the carrier (4)

5.

(3) which has its fixed point on the tractor (7), and in that a hydraulic working cylinder (10) is mounted on this lever (8), the lever (3) Attacks

6&

? Gate direction according to claims 1 to 5, characterized in that the housing of the pump (14) is connected to the housing of the transmission (13) via two pipes (11, 12), one (11) of which contains the pump shaft (19) , While the other (12) as delivery tube carries the outlet port (21), the three-way valve (22) and the nozzle (23)

Epsilon

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(19) BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENTAMT

Behördeneigentum

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(54) Bezeichnung: Vorrichtung zum Aufbereiten und Fördern von Dickstoffen enthaltenden Flüssigkeiten

(71) Anmelder: Kronseder, Josef, 8313 Vilsbiburg

(72) Erfinder: gleich Anmelder

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IHR ZEICHEN:

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Vorrichtung zum Aufbereiten und Fördern von Dickstoffen enthaltenden Flüssigkeiten.

Die Erfindung betrifft eine Vorrichtung zum Aufbereiten und Fördern von Dickstoffen enthaltenden Flüssigkeiten, insbesondere Jauche.

Die Entfernung von Jauche o.dgl. aus Sitzgruben macht auch heute noch große Schwierigkeiten, da sich die in der Flüssigkeit befindlichen Feststoffe auf dem Boden der Grube ab-

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setzen und nur äußerst schwer zu beseitigen sind. Man kann immer wieder die Beobachtung machen, daß die Feststoffe nach dem Auspumpen der Flüssigkeit mit der Schaufel mühsam ausgebracht werden.

Es sind zwar schon Pumpen bekannt geworden, die mit einer gesonderten Schneideinrichtung für die Dickstoffe ausgestattet sind, jedoch erfassen derartige Pumpen nur die unmittelbar anliegenden Grenzbereiche der Jauche, während die entfernter liegenden Bereiche unbeeinflußt bleiben.

Um die geschilderten Nachteile zu vermeiden wird eine Vorrichtung zum Aufbereiten und Fördern von Dickstoffen enthaltenden Flüssigkeiten vorgeschlagen, die erfindungsgemäß einen Ausleger, der eine über ein Getriebe antreibbare Pumpe, ein auf die Pumpenwelle aufsteckbares Mixrad, eine an das Förderrohr der Pumpe angeschlossene Düse sowie einen diese steuernden Dreiwegehahn aufweist.

Eine derartig ausgebildete Vorrichtung gestattet es die Flüssigkeit, über den reinen Auspumpvorgang hinaus, mittels des Mixrades umzurühren unter etwaigem gleichzeitigen Zerschneiden von Dickstoffen, z.B. Stroh, und mit Hilfe der Pumpe und der Düse umzuwälzen, wodurch die Dickstoffe aufgewirbelt werden und sich nicht absetzen können.

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Da für den Betrieb der Pumpe und der Düse eine höhere Geschwindigkeit erforderlich ist als für den Betrieb des Mixrades, wird das Getriebe mit zwei Zapfwellen und einer Ausgangswelle (Pumpenwelle) ausgestattet und so ausgelegt, daß bei gleicher Eingangsgeschwindigkeit der Zapfwellen die Pumpenwelle mit verschiedenen Geschwindigkeiten umläuft.

Um die Vorrichtung für den Schlepperbetrieb auszurüsten, wird der Ausleger ausschwenkbar an einem Träger angelenkt, der an die Anhängerkupplung des Schleppers ankuppelbar ist.

Weitere Einzelheiten der Vorrichtung ergeben sich aus der Zeichnung in der ein Ausführungsbeispiel des Gegenstandes der Erfindung in der Seitenansicht dargestellt ist.

Die gezeigte Vorrichtung besteht im wesentlichen aus einem Ausleger 1, der über zwei Platten 2, von denen nur die vordere zu sehen ist, mittels Bolzen 3 an einem Träger 4 angelenkt ist. Der Neigungswinkel des Auslegers 1 gegenüber dem Träger 4 läßt sich mit Hilfe einer Stellspindel 5 verändern. Der Träger 4 kann an der Anhängerkupplung 6 des Schleppers 7 so befestigt werden, daß er nach oben ausschwenkbar ist, wie dies in der Zeichnung in gestrichelten Linien dargestellt ist.

Um das Ausschwenken zu ermöglichen, ist an der Platte 2 ein

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Hebel 8 angelenkt, an dem wiederum die Kolbenstange 9 eines hydraulischen Arbeitszylinders 10 angreift.

Der Ausleger weist zwei Rohre 11, 12 auf, die oben an dem Gehäuse des Getriebes 11 und unten an dem Gehäuse der Pumpe 14 befestigt sind. An dem Getriebe sind zwei Zapfwellen 15, 16 vorgesehen, die wahlweise über eine Gelenkwelle 17 mit der Zapfwelle 18 des Schleppers verbunden werden können. In dem Rohr 11 befindet sich die Pumpenwelle 19, auf die das Mixrad 20 aufgesteckt werden kann. Das Rohr 12 dient als Förderrohr und ist zu diesem Zweck mit einem Auslaßstutzen 21, einem Dreiwegehahn 22 und einer Düse 23 ausgestattet.

Befindet sich der Schlepper 7 auf der Grubendecke 24 und taucht der Ausleger 1 durch das Grubenloch 25 in die Jauche 26 ein, so ergeben sich folgende Möglichkeiten:

1. Zerkleinern.

   Die Zapfwelle 15 des Getriebes 13 wird mit der Zapfwelle 18 des Schleppers 7 verbunden. Der Dreiwegehahn 22 wird geschlossen, das Mixrad 20 auf die Pumpenwelle 19 aufgesteckt und deren Lagerschale 27 am Gehäuse der Pumpe 14 festgeklemmt. Das Mixrad läuft mit ca. 540 U/min um und die Jauche 26 wird aufgewühlt, wobei grobe Teile von dem Mixrad zerteilt werden.

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2. Rühren.

Die Zapfwelle 16 des Getriebes 13 wird mit der Zapfwelle 18 des Schleppers 7 verbunden. Der Dreiwegehahn 22 wird so eingestellt, daß eine Verbindung von der Pumpe 14 zur Düse 23 geschaffen wird. Die Pumpe 14, die jetzt mit ca. 1.350 U/min umläuft, saugt somit Teile der Jauche 26 an und preßt sie unter erhöhtem Druck durch die Düse 23 wieder in die Jauche 26 zurück.

3. Pumpen.

Die Zapfwelle 16 des Getriebes 13 bleibt mit der Zapfwelle 18 des Schleppers 7 verbunden. Der Dreiwegehahn 22 wird so eingestellt, daß eine Verbindung von der Pumpe 14 zum Auslaßstutzen 21 hergestellt wird. Die Pumpe 14 fördert somit die Jauche 26 aus der Grube 28 durch den Auslaßstutzen 21 nach außen.

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P a t e n t a n s p r ü c h e :

1. Vorrichtung zum Aufbereiten und Fördern von Dickstoffen enthaltenden Flüssigkeiten, gekennzeichnet durch einen Ausleger (1), der eine über ein Getriebe (13) antreibbare Pumpe (14), ein auf die Pumpenwelle (19) aufsteckbares Mixrad (20), eine an das Förderrohr (12) der Pumpe (14) angeschlossene Düse (23) sowie einen diese steuernden Dreiwegehahn (22) aufweist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das Getriebe (13) mit zwei Zapfwellen (15, 16) und einer Ausgangswelle (Pumpenwelle) 19 ausgestattet und so ausgelegt ist, daß bei gleicher Eingangsgeschwindigkeit der Zapfwellen (15, 16) die Pumpenwelle (19) mit verschiedenen Geschwindigkeiten umläuft.

3. Vorrichtung nach den Ansprüchen 1 bis 3, dadurch gekennzeichnet, daß der Ausleger (1) ausschwenkbar an einem Träger (4) angelenkt ist, der an die Anhängerkupplung (6) eines Schleppers (7) ankuppelbar ist.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß zwischen dem Ausleger (1) und dem Träger (4) eine Stellspindel (5) vorgesehen ist.

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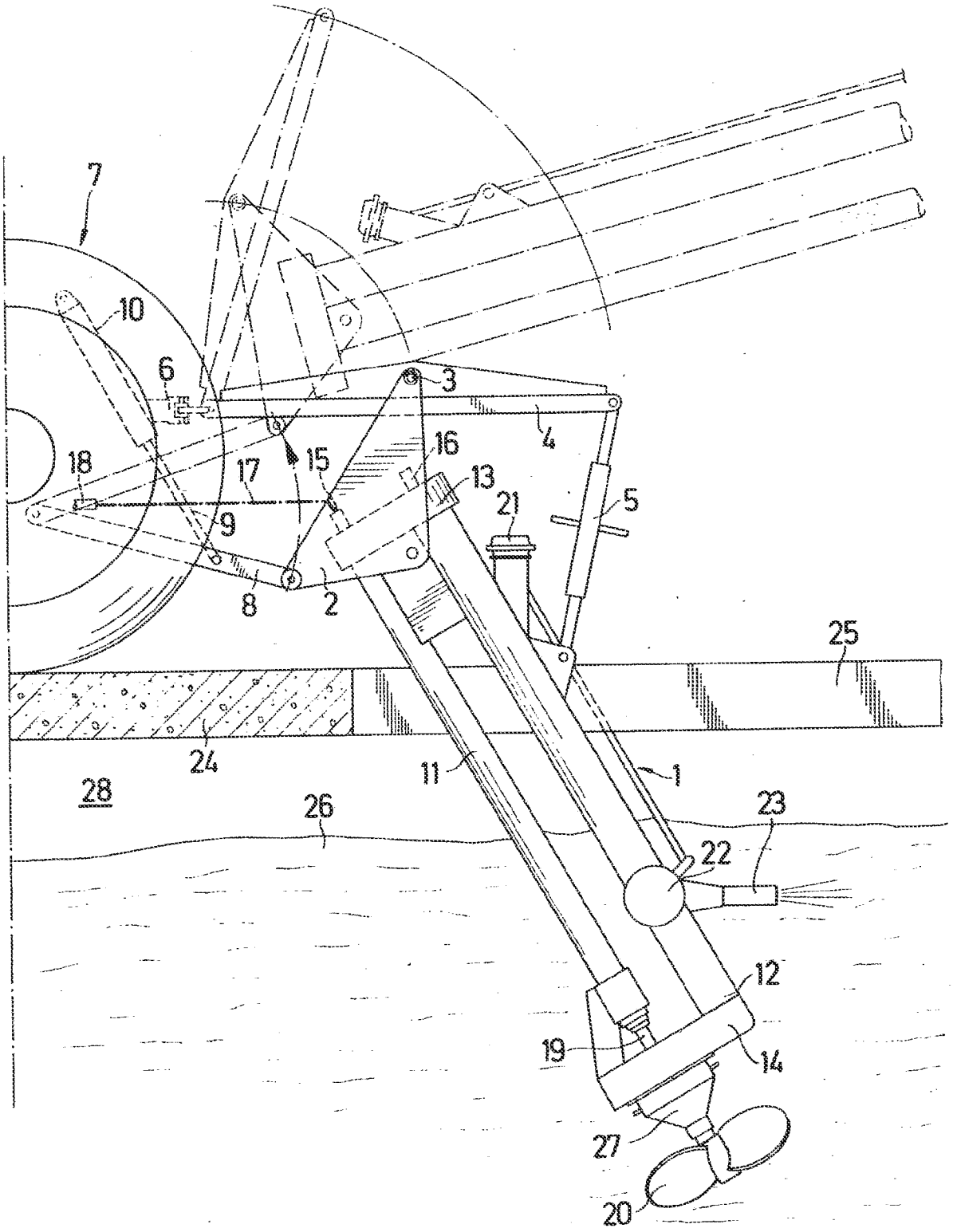
5. Vorrichtung nach den Ansprüchen 3 und 4, dadurch gekennzeichnet, daß an dem Ausleger (1) ein Hebel (8) angelenkt iet, der seinen Festpunkt am Schlepper (7) hat, und daß an diesem Hebel (8) ein hydraulischer Arbeitszylinder (10) angreift.

6. Vorrichtung nach den Ansprüchen 1 bis 5, dadurch gekennzeichnet, daß das Gehäuse der Pumpe (14) über zwei Rohre (11, 12) mit dem Gehäuse des Getriebes (13) verbunden ist, von denen eines (11) die Pumpenwelle (19) enthält, während das andere (12) als Förderrohr den Auslaßstutzen (21), den Dreiwegehahn (22) und die Düse (23) trägt.

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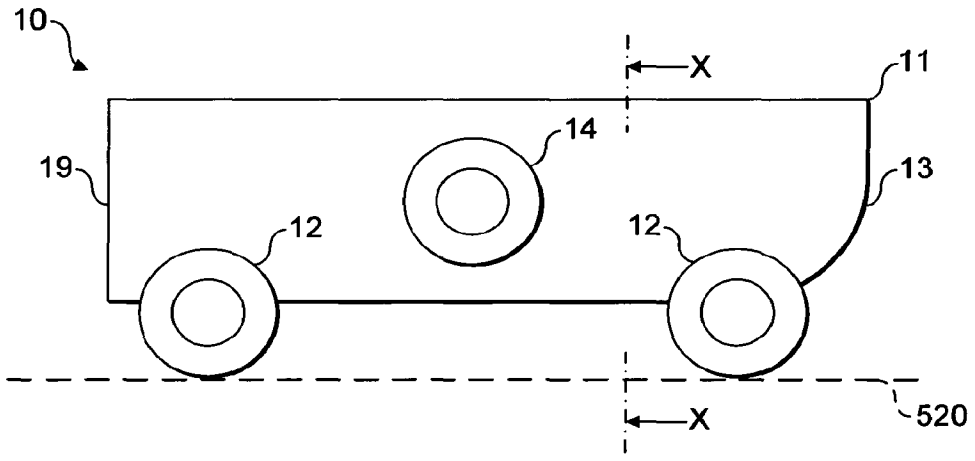
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[Continued on next page]

(54) Title: AMPHIBIOUS VEHICLE



(57) Abstract: Amphibious vehicle (10) has land propulsion means and marine propulsion means. At least two axles with wheels (12) are spaced apart along the length of the vehicle. At least one intermediate axle with retractable wheel(s) (14) is positioned between the other axles. This additional axle may improve manoeuvrability over rough ground. Wheel(s) (14) may be retracted on water and/or on land. Wheels (12) may also be retractable. One or more axles may be driven, full time or selectively. The vehicle may plane on water, and may have a vee type hull (11). Marine propulsion may be by means of a jet drive. Wheel(s) (14) may retract vertically or through arcs around a longitudinal axis of the vehicle. Skid steer may be used. Mudguards, a vehicle roof, and retraction guides for the wheels (slides 16) may be fitted. Pairs of slides may provide roof supports. A forward control driving position may be provided.

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AMPHIBIOUS VEHICLE

The present invention relates to an amphibious vehicle, and in particular to an amphibious vehicle which is provided with at least one intermediate axle supporting a wheel which is retractable above the vehicle waterline.

Placement of axles in a conventional off-road vehicle is a compromise between breakover angle on the one hand and approach and departure angles on the other hand. Figure 12 illustrates these angles for a vehicle 500. A front wheel 503 is mounted on a front axle, and a rear wheel 504 is mounted on a rear axle. The axles have to be inset from the outer ends 505, 506 of the vehicle to give an acceptable breakover angle 507, but this limits mobility by reducing the approach angle 501 and departure angle 502. It is also conventional to inset axles from bumpers to build in crushable space for impact absorption. However, where mobility off-road is the prime concern, the fitment of an intermediate axle or axles each supporting a wheel and provided between front and rear axles makes breakover angle 507 an irrelevant concept. The vehicle will not ground on its sills between the axles, because the additional wheel or wheels are there to support it. This allows the front and rear axles to be pushed out towards the bumpers, maximizing approach and departure angles 501, 502.

Multiple axle off-road vehicles have many advantages off-road, but are limited on road. They may suffer tyre scrub where single axle steering is used; multiple axle steering adds complexity, weight and cost. They are often noisy, and typically use a lot of fuel. In an age where relations between military forces and civilians are often fraught, any modification to military vehicles which makes their passage along public roads less conspicuous, and less likely to induce hostility, is a major advantage.

Four wheeled vehicles may be adapted for use off road by providing balloon tyres and elongated suspension travel in both bump and rebound modes (see, for example. the Doliner Go-Devil at www.amphibiousvehicle.net).

However, these modifications may limit speed, economy, and ease of handling on road. Provision of retractable intermediate axles allows tyres and suspension to be tuned more to road use, and may avoid use of balloon tyres which have speed limits on road.

The present invention provides, in a first aspect, an amphibious vehicle for use on land and on water, comprising land propulsion means and marine propulsion means, wherein the land propulsion means comprises at least two axles spaced apart along the length of the vehicle and at least one intermediate axle positioned therebetween, the at least one intermediate axle supporting at least one wheel which may be retracted above the vehicle waterline for use of the vehicle on water and/or on land.

In a second aspect, the present invention provides an amphibious vehicle for use on land and on water, comprising land propulsion means, marine propulsion means, at least two wheels spaced apart along the length of the vehicle and at least one intermediate wheel positioned therebetween, wherein the at least one intermediate wheel is retractable in use of the vehicle on water and/or on land.

According to other aspects of the present invention, there is provided an amphibious vehicle as set forth in the appended claims.

Preferred embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic side elevation view of a first embodiment of amphibious vehicle according to the present invention on land with all axles protracted;

Figure 2 is a schematic transverse cross-section view of the amphibious vehicle of Figure 1 taken at X-X;

Figure 3 is a schematic side elevation view of the amphibious vehicle of Figure 1 on land with the intermediate axle retracted;

Figure 4 is a schematic transverse cross-section view of the amphibious vehicle of Figure 3 taken at X-X;

Figure 5 is a schematic side elevation view of the amphibious vehicle of Figure 1 on water with all axles retracted;

Figure 6 is a schematic side elevation view of a second embodiment of amphibious according to the present invention on land provided with two intermediate axles;

Figure 7 is a schematic transverse cross-section view of a further embodiment of amphibious vehicle according to the present invention in a first state;

Figure 8 is a schematic transverse cross-section view of the amphibious vehicle of Figure 7 in a second state;

Figure 9 is a schematic transverse cross-section view of a yet further embodiment of amphibious vehicle according to the present invention;

Figure 10 is a perspective view of amphibious vehicle according to the present invention in use on water with all axles retracted;

Figure 11 is a further perspective view of the amphibious vehicle of Figure 10 in use on land with all axles protracted; and

Figure 12 is a schematic side elevation view of a prior art vehicle.

Figure 1 shows an amphibious vehicle 10 having a main vehicle structure in the form of a hull 11. The vehicle has a front (bow) 13 and a rear (stern) 19. The vehicle 10 is propelled on land by means of wheels 12, 14 provided longitudinally along each side of the hull 11. Each wheel 12, 14 is supported on a retractable axle (not shown). The wheels 12, 14 may all be driven wheels or may comprise one or more driven wheels and one or more non-driven wheels. The vehicle 10 may be steered conventionally using the front wheels and/or by independently operating the wheels 12, 14 on each side of the hull 11 (e.g. by braking or reversing certain wheels, i.e. by skid-steer).

This arrangement is advantageous off-road, where the wheels 12, 14 can engage the terrain surface even over rugged terrain. The wheels 12, 14 allow for improved steering compared to tracked vehicles, particularly on hard surfaces.

The hull 11 is a vee type hull as shown in Figure 2. The vehicle 10 additionally has a marine propulsion means for travelling on water. This is preferably in the form of at least one jet drive (not shown). The jet drive is able to generate sufficient thrust to allow the vehicle 10 to plane on water.

Figure 2 shows a schematic cross-sectional view of the amphibious vehicle 10 illustrated in Figure 1 looking back from the front at position X-X. Each intermediate axle supporting a wheel 14 has at least one guide element located in one or more slides 16. The slides 16 extend substantially vertically adjacent the hull 11, and allow the intermediate axles supporting a wheel 14 to be raised or lowered substantially vertically. The slides 16 may be in the form of tubes. The slides 16 are arranged in pairs across the width of the vehicle 10. Pairs of slides 16 may be attached to each other across the width of the vehicle 10 by attachment elements (not shown).

Hydraulic rams (not shown) are connected to the intermediate axles supporting a wheel 14, and are operable to raise or lower the intermediate axles supporting a wheel 14 in the slides 16. The intermediate axles supporting a wheel 14 can be raised until they are above the waterline of the vehicle 10. This allows the vehicle 10 to plane on water without interference or drag from the intermediate axles supporting a wheel 14. The intermediate axles supporting a wheel 14 are raisable above the level of any rudder. All protraction operations are inverse to the retraction operations described.

The hydraulic rams may additionally provide for suspension springing of the vehicle 10. The hydraulic rams may additionally provide suspension damping for the vehicle, as known from WO 01/74612 which is incorporated herein by reference.

A cover or roof (not shown) may be supported by the slides 16. The cover or roof may be attached to the attachment elements. The cover may provide physical protection for occupants of the vehicle in a military conflict, for example providing protection from enemy fire.

Figure 3 shows the amphibious vehicle of Figure 1 in which the intermediate axles supporting a wheel 14 have been raised upwardly (retracted). The intermediate axles supporting a wheel 14 are raised above the level of the waterline 540 of the vehicle 10 (see Figure 5). Conventional front and rear axles supporting wheels 12 are shown in the protracted position with the wheels 12 on the ground, so as to drive and steer the vehicle 10. This state is advantageous on roads, where the wheels 12 allow relatively fast, quiet travel and allow smooth steering of the amphibious vehicle 10.

Figure 4 shows a schematic cross-sectional view of the amphibious vehicle 10 illustrated in Figure 3 looking back from the front at position X-X. Each intermediate axle supporting a wheel 14 is shown in the retracted position. The wheels 12 may also be raised in slides 16, or by any other means for retracting wheels.

Figure 5 shows the front and rear wheels 12 retracted in addition to the intermediate retracted wheels 14. This allows the amphibious vehicle 10 to travel on water, where it is propelled by a jet drive. The wheels 12, 14 are raised above the waterline 540, allowing the vehicle 10 to plane on the water without interference from the wheels 12, 14.

Figure 6 shows a second embodiment of amphibious vehicle 110. The vehicle 110 is provided with a hull 111 having a front (bow) 113 and a rear (stern) 119. The vehicle 110 has a front pair of wheels 124 and a rear pair of wheels 126 (all shown retracted). Two pairs of intermediate axles supporting wheels 128 are located between the front and rear wheels 124, 126, each pair of wheels 128

on either side of the vehicle 110 (all shown protracted). All or any of the front and rear wheels 124, 126 and the intermediate axles supporting a wheel 128 can be independently raised or lowered on slides or otherwise as described with respect to Figures 2 and 4 above. Figure 6 shows the front and rear wheels 124, 126 above the waterline 540, in a retracted position, and shows the intermediate axles supporting a wheel 128 in a protracted position, extending below the hull 111. The vehicle 110 is shown standing with wheels 128 on the ground 520. This arrangement is advantageous in certain off-road scenarios, where the wheels 128 can engage the terrain surface even over rugged terrain.

In the embodiments described above, all of the wheels 12, 14; 124, 126, 128 may be driven. Alternatively, only the front wheels or the rear wheels 12; 124, 126 may be driven. The front wheels 12; 124, rear wheels 12; 126, or all road wheels 12, 14; 124, 126, 128 may be used to steer the vehicle 10; 110 on land. At least wheel 12, 14; 124, 126, 128 may in particular be driven, stopped (braked) or reversed in order to steer the vehicle 10; 110.

Figure 7 shows an alternative means for raising and lowering the intermediate axles supporting a wheel 14. This may be used on any of the previously described embodiments. The intermediate axles supporting a wheel 14 are mounted on support members 30. The support members 30 extend vertically downwardly from the main structure when the intermediate axles supporting a wheel 14 are in the lowered position.

As shown in Figure 8, the support members 30 are pivotally attached to the main structure, so that the intermediate axles supporting a wheel 14 can swing laterally outwardly in an arc. The intermediate axles supporting a wheel 14 rotate about one or more axes extending substantially longitudinally along the vehicle 10. The support members 30 can pivot to a horizontal orientation in order to lift the intermediate axles supporting a wheel 14 away from the hull 11 and above the waterline 540 of the vehicle 10. The retracted position is thus

substantially perpendicular to the protracted position. In the retracted position the wheels 14 may act as fenders for the amphibious vehicle 10 when on the water.

All wheels 12, 14; 124, 126, 128 may also be raised or lowered by rotation in an arc as described above.

As shown in Figure 9, mudguards 52 or spray guards 52 may be provided over the intermediate axles supporting a wheel 14. The mudguards 52 may be rigidly attached to the hull 11, such that the mudguards 52 do not move when the intermediate axles supporting a wheel 14 are raised and lowered. Alternatively, the mudguards 52 may be attached to the intermediate axles supporting a wheel 14 and/or slides such that the mudguards 52 are raised and lowered with the intermediate axles supporting a wheel 14 to stay a constant distance from the wheels 14.

Figure 10 shows the vehicle 10 in use planing on water, with all wheels 12, 14 retracted.

Figure 11 shows the vehicle 10 in use on land, with all wheels 12, 14 protracted.

The wheels of any of the embodiments may be powered (so as to provide drive) by a mechanical transmission. Alternatively, the wheels may be powered by an electric transmission or a hydraulic transmission. Alternatively, the wheels may be powered by a transmission comprising mechanical and hydraulic elements. The hydraulic elements may be hydraulic wheel motors.

The wheels of any of the embodiments may be lowered on water; either to limit speed in crowded spaces e.g. harbours or marinas; in readiness for landing; or in areas such as swamps, where depth of water is unpredictable and constantly changing. Furthermore, where heavy marine growth in swamps may choke up a water jet intake.

Although it is envisaged that a vehicle according to the invention should be able to reverse on water, the shape of a typical planing hull, with a tapered bow and cut-off stern, indicates that there will be a forward direction of travel in which the vehicle can travel considerably faster than in reverse, due to the very different hydrodynamic resistance encountered in each direction. In general, an amphibious vehicle will have similar proportions to a road vehicle or boat, being approximately 1.5-5 times, preferably 2.5-4 times, longer than it is wide. The practical and legislative limits on width of road vehicles are a major influence here; as are the hydrodynamic characteristics of the hull. The conventional direction of travel of an amphibious vehicle is along its length.

Where reference herein is made to a "main structure" of the vehicle, this should be regarded as the hull for marine use; and as the body for land use.

Any of the embodiments described may be operated from a "forward control" driving position at the front of the vehicle, and preferably in front of the engine. With such a vehicle, there is very little bodywork forward of the windscreen – possibly just a bumper. Such a driving position offers excellent visibility on both land and water. The obvious drawbacks are visibility to hostile fire in military applications; and lack of crushable structure forward of the driver in case of collision.

A jet drive has been described as providing drive for the vehicle on water. Alternatively, a marine outdrive or propeller or propellers may be used. Providing a marine outdrive improves ease of conversion from a dedicated road vehicle. Alternatively, the vehicle may have two or more jet drives for propulsion on water.

The front, intermediate and rear wheels have been described as being driven for driving the vehicle on land. Alternatively, the certain wheels may be selectively driven or not driven at all.

Hydraulic rams have been described as raising or lowering the intermediate axles supporting a wheel. Alternatively, the intermediate axles supporting a wheel may be moved by threaded drives, hydraulic motors or other suitable means. Alternatively, the intermediate axles supporting a wheel may be raised and lowered by pneumatic rams or other pressurised air actuating means. The pneumatic rams may additionally provide for suspension springing of the vehicle. The pneumatic rams may additionally provide suspension damping for the vehicle.

Pivoted link arms or other linkages may be used between the actuating means and the intermediate axles and/or wheels as required.

The intermediate axles supporting a wheel have been described as mounted on either side of the hull. Alternatively, a single intermediate axle supporting a wheel may be provided centrally under the centreline of the hull. Alternatively, three intermediate axles supporting a wheel may be provided, one on each side of the hull and one under the centreline of the hull. The intermediate axles supporting a wheel may be located either on the sides of the hull as shown, or partially or fully mounted underneath the hull.

A pair of front wheels and a pair of rear wheels have been described. Alternatively, the vehicle may have a pair of front wheels and a single, central, rear wheel. Alternatively, the vehicle may have a pair of rear wheels and a single, central, front wheel. Alternatively, the vehicle may have additional or fewer wheels than any of the particular embodiments shown, including in relation to the intermediate axles described. For example, the vehicle may be provided with just one wheel at each axle, i.e. just three wheels in all.

It will be appreciated from the foregoing that more than one intermediate axle may be provided. In every case, each and every axle may be retracted independently of the other or others, including where a plurality of intermediate axles are provided. Furthermore, an axle may in fact comprise two stub axles

provided one on each opposite side of the vehicle, or just one stub axle provided on one side or other of the vehicle or at a location in-between.

Reference herein to the terms axle and axles simply infers something about which a wheel or wheels may rotate. An axle may comprise just one wheel supported on a wheel hub or stub axle. Alternatively, an axle may comprise two wheels supported on a traditional axle.

Although several embodiments of amphibian have been described above; any one or more or all of the features described (and/or claimed in the appended claims) may be provided in isolation or in various combinations in any of the embodiments. As such, any one or more these features may be removed, substituted and/or added to any of the feature combinations described and/or claimed. For the avoidance of doubt, any of the features of any embodiment may be combined with any other feature from any of the embodiments.

Whilst preferred embodiments of the present invention have been described above and illustrated in the drawings, these are by way of example only and non-limiting. It will be appreciated by those skilled in the art that many alternatives are possible within the ambit of the invention, as set out in the appended claims.

CLAIMS

1. An amphibious vehicle for use on land and on water, comprising land propulsion means and marine propulsion means, wherein the land propulsion means comprises at least two axles spaced apart along the length of the vehicle and at least one intermediate axle positioned therebetween, the at least one intermediate axle supporting at least one wheel which may be retracted above the vehicle waterline for use of the vehicle on water and/or on land.

2. An amphibious vehicle as claimed in claim 1 wherein the at least two axles spaced apart along the length of the vehicle each support at least one wheel which may be retracted above the vehicle waterline for use of the vehicle on water and/or on land.

3. An amphibious vehicle as claimed in claim 1 or claim 2 wherein one or more of the axles are driven axles.

4. An amphibious vehicle as claimed in any one of the preceding claims wherein drive to one or more of the axles is selective.

5. An amphibious vehicle as claimed in any one of the preceding claims which is adapted to plane over water.

6 An amphibious vehicle as claimed in any one of the preceding claims comprising a vee type hull.

7. An amphibious vehicle as claimed in any one of the preceding claims wherein the marine propulsion means comprises at least one jet drive.

8. An amphibious vehicle as claimed in any one of the preceding claims wherein at least one of the spaced apart axles is provided at a first proximal or

front end of the vehicle and at least one of the spaced apart axles is provided at a second distal or rear end of the vehicle.

9. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle is provided towards the rear of the vehicle.

10. An amphibious vehicle as claimed in any one of claims 1 to 8 wherein the at least one intermediate axle is provided towards the front of the vehicle.

11. An amphibious vehicle as claimed in any one of claims 2 to 10 wherein the at least one supported wheel of the at least one intermediate axle is provided in line with the supported wheels of the at least two spaced apart axles along a longitudinal axis running fore and aft along the vehicle.

12. An amphibious vehicle as claimed in any one of claims 2 to 10 wherein the at least one supported wheel of at the least one intermediate axle is not in line longitudinally with the supported wheels of the at least two spaced apart axles.

13. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle comprises an plurality of intermediate axles each supporting at least one wheel and being retractable independently of the or each other intermediate axle and/or the other axles of the vehicle.

14. An amphibious vehicle as claimed in claim 13 wherein the supported wheels of the plurality of intermediate axles are provided in line with one another along a longitudinal axis running fore and aft along the vehicle.

15. An amphibious vehicle as claimed in claim 13 wherein the supported wheels of the plurality of intermediate axles are not in line longitudinally with one another.

16. An amphibious vehicle as claimed in any one of the preceding claims wherein the land propulsion means are powered by a mechanical transmission.

17. An amphibious vehicle as claimed in any one of claims 1 to 15 wherein the land propulsion means are powered by an electric transmission.

18. An amphibious vehicle as claimed in any one of claims 1 to 15 wherein the land propulsion means are powered by a hydraulic transmission.

19. An amphibious vehicle as claimed in any one of claims 1 to 15 wherein the land propulsion means are powered by a transmission comprising mechanical and hydraulic elements.

20. An amphibious vehicle as claimed in claim 19 wherein the hydraulic elements comprise hydraulic wheel motors.

21. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle is retractable substantially vertically.

22. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle is retractable about one or more axes running fore and aft along the length of the vehicle, so that each intermediate axle retracts in an arc about said axes.

23. An amphibious vehicle as claimed in claim 22 wherein the retracted position of the axis of the at least one intermediate axle is substantially perpendicular to its protracted position.

24. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle is retracted by means of threaded drives.

25. An amphibious vehicle as claimed in any one of claims 1 to 23 wherein the at least one intermediate axle is retracted by means of hydraulic rams or pneumatic rams.

26. An amphibious vehicle as claimed in claim 25 wherein the hydraulic rams or pneumatic rams also provide vehicle suspension springing.

27. An amphibious vehicle as claimed in claim 25 or claim 26 wherein the hydraulic rams or pneumatic rams also provide vehicle suspension damping.

28. An amphibious vehicle as claimed in any one of the preceding claims wherein the at least one intermediate axle has guide elements which locate in tubes attached to a main vehicle structure which guide the retraction of the at least one intermediate axle.

29. An amphibious vehicle as claimed in claim 28 wherein the tubes are attached to each other in pairs across the width of the vehicle by attachment elements.

30. An amphibious vehicle as claimed in any one of claims 1 to 27 wherein the at least one intermediate axle has guide elements which locate in slides attached to a main vehicle structure which guide the retraction of the at least one intermediate axle.

31. An amphibious vehicle as claimed in claim 30 wherein the slides are attached to each other in pairs across the width of the vehicle by attachment elements.

32. An amphibious vehicle as claimed in claim 29 or claim 31 wherein a vehicle cover or roof is attached to the attachment elements.

33. An amphibious vehicle as claimed in any one of the preceding claims wherein the wheel or wheels of the at least one intermediate axle has a mudguard fitted above.

34. An amphibious vehicle as claimed in claim 33 wherein the mudguard is attached so as to retract with the at least one intermediate axle.

35. An amphibious vehicle as claimed in any one of the preceding claims wherein the vehicle is provided with a forward control driving position.

36. An amphibious vehicle as claimed in any one of the preceding claims wherein the, some or each of the at least one intermediate axle supporting at least one wheel may be independently retracted in or for use of the vehicle on land.

37. An amphibious vehicle as claimed in any one of the preceding claims wherein the, some or each of the at least one intermediate axle supporting at least one wheel may be used to steer the vehicle.

38. An amphibious vehicle as claimed in any one of the preceding claims wherein the, some or each of the at least one intermediate axle supporting at least one wheel may be stopped or braked in order to steer the vehicle.

39. An amphibious vehicle as claimed in any one of the preceding claims wherein the, some or each of the at least one intermediate axle supporting at least one wheel may be reversed in order to steer the vehicle.

40. An amphibious vehicle for use on land and on water, comprising land propulsion means, marine propulsion means, at least two wheels spaced apart along the length of the vehicle and at least one intermediate wheel positioned therebetween, wherein the at least one intermediate wheel is retractable in use of the vehicle on water and/or on land.

41. An amphibious vehicle as claimed in claim 40 wherein the at least two wheels spaced apart along the length of the vehicle are retractable in use of the vehicle on water and/or on land.

42. An amphibious vehicle as claimed in any one of the preceding claims wherein each retractable wheel is retractable independently of each other retractable wheel in use of the vehicle on water and/or on land.

43. An amphibious vehicle as claimed in any one of the preceding claims wherein each pair of retractable wheels is retractable independently of each other retractable wheel or pair of retractable wheels in use of the vehicle on water and/or on land.

44. An amphibious vehicle substantially as hereinbefore described with reference to or as shown in any one or more of the accompanying Figures 1 to 11.

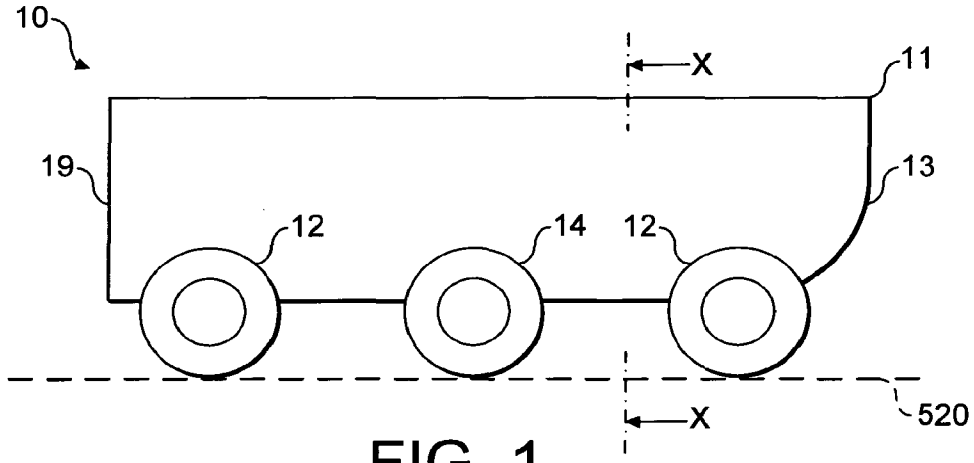


FIG. 1

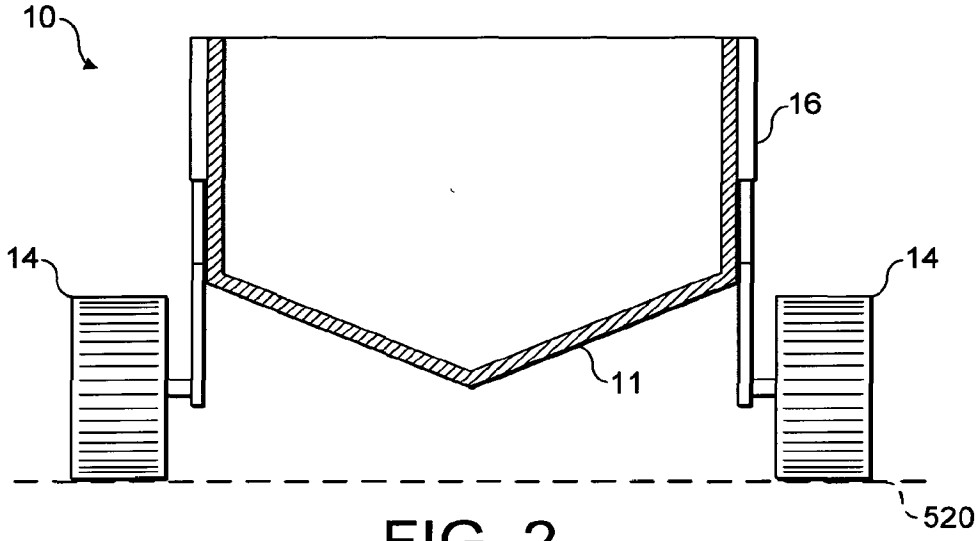


FIG. 2

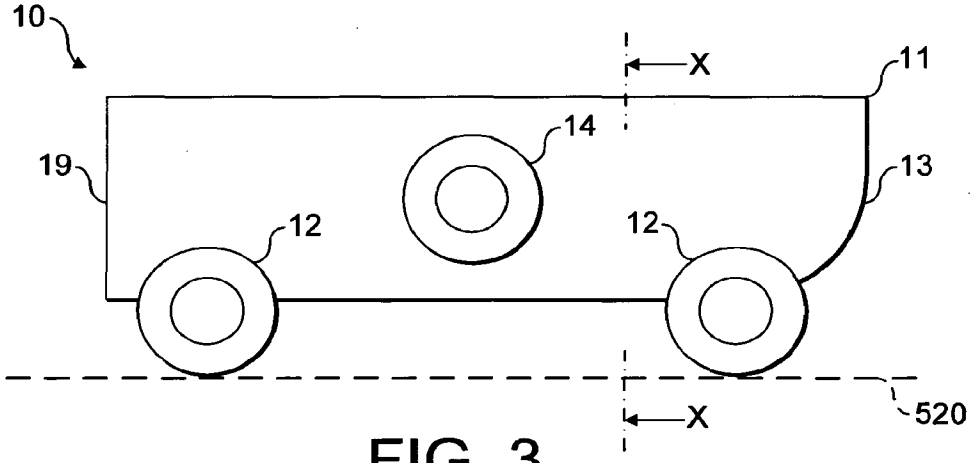


FIG. 3

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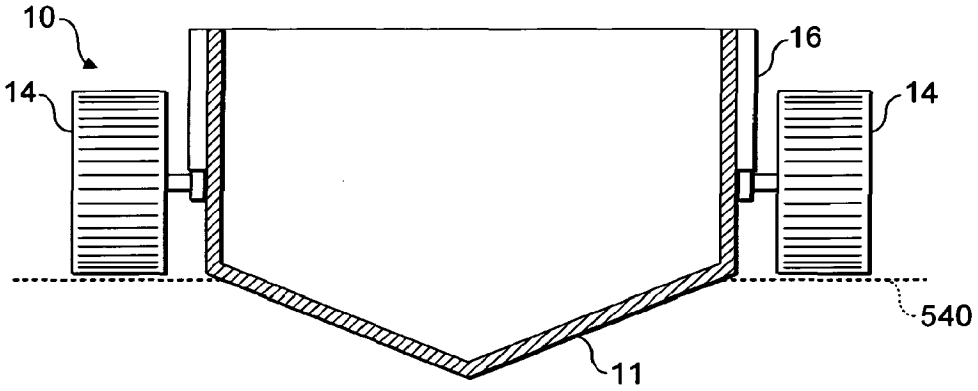


FIG. 4

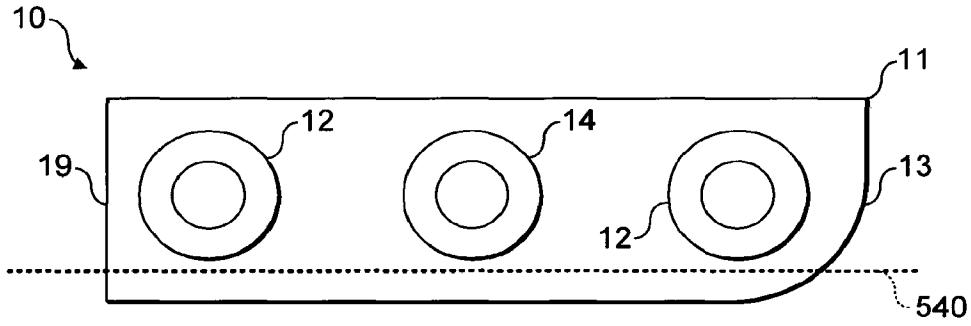


FIG. 5

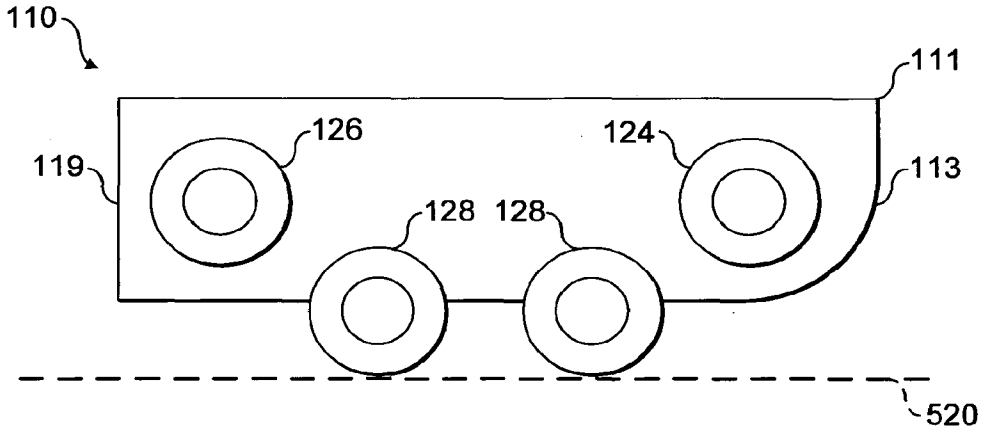


FIG. 6

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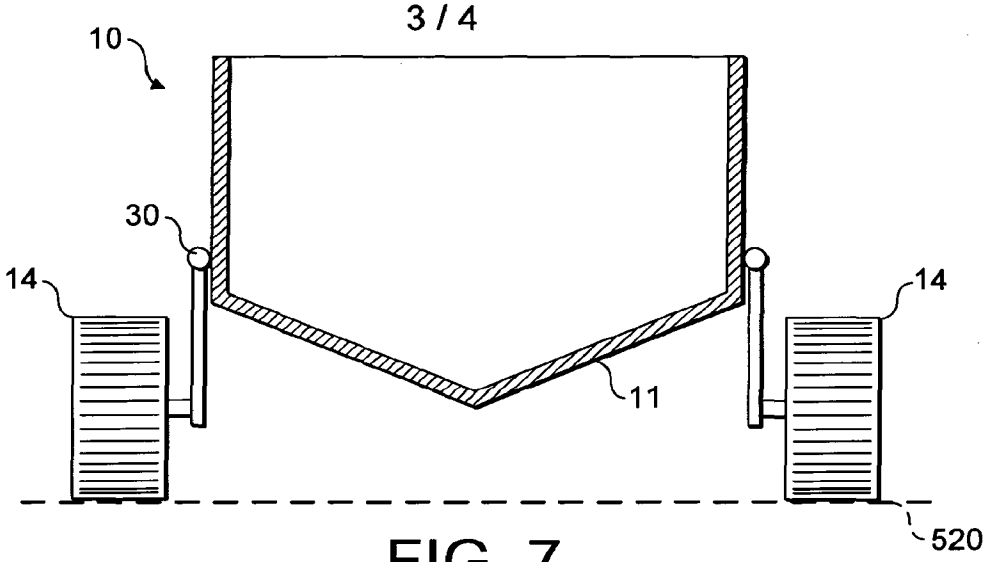


FIG. 7

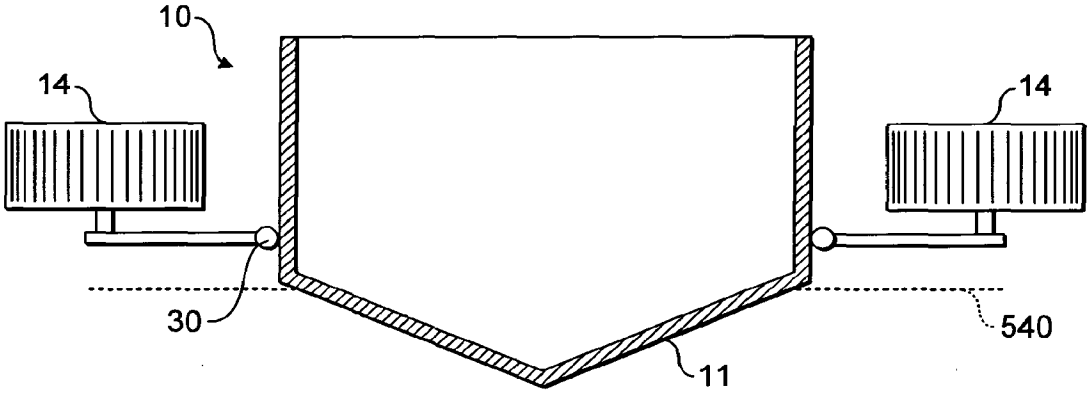


FIG. 8

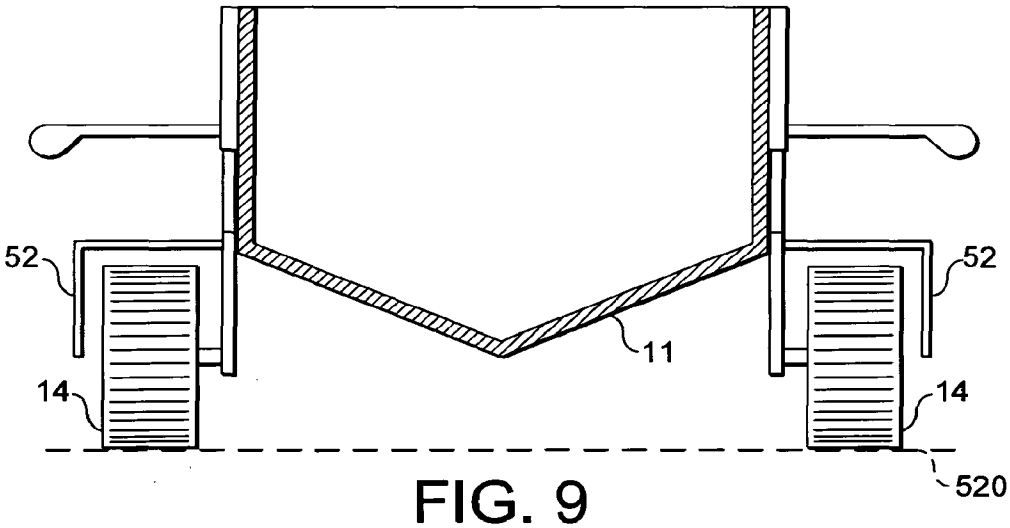


FIG. 9

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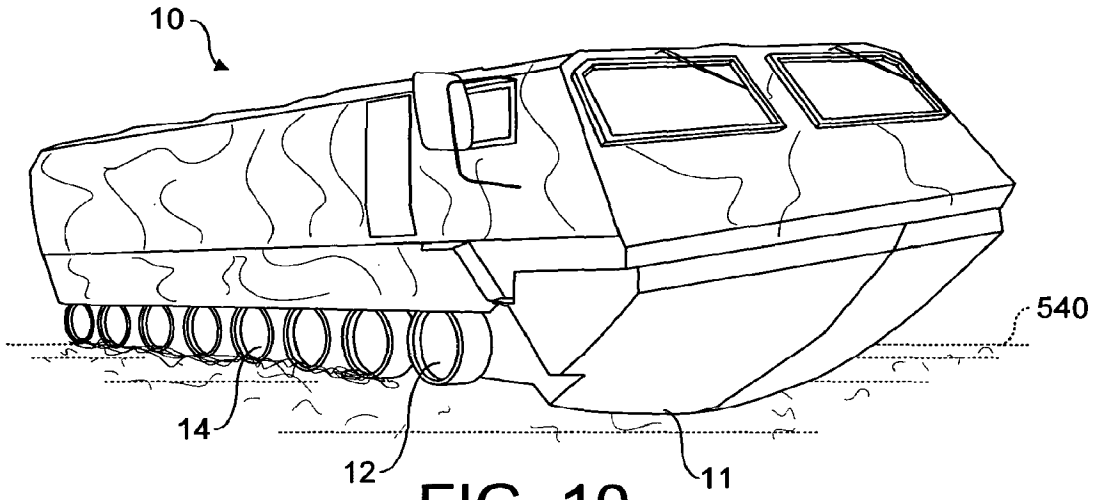


FIG. 10

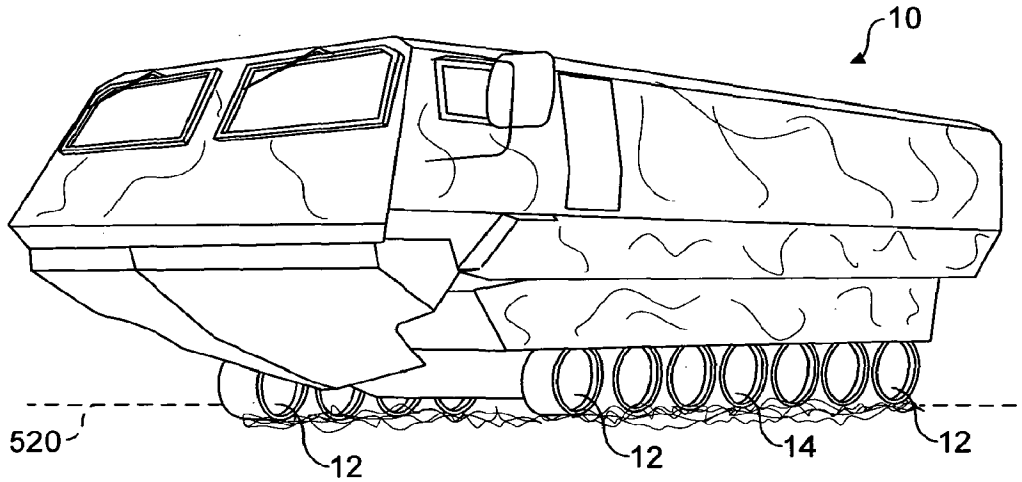


FIG. 11

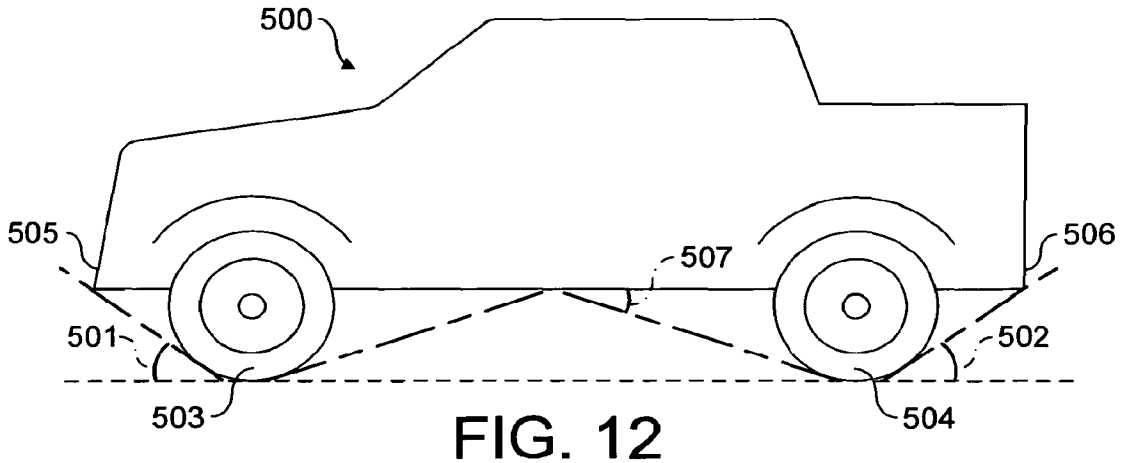


FIG. 12

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[19] 中华人民共和国国家知识产权局

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权利要求书 4 页 说明书 8 页 附图 4 页

[54] 发明名称

水陆两用车辆

[57] 摘要

水陆两用车辆(10)具有陆地推进装置和船用推进装置。至少两个具有车轮(12)的桥沿所述车辆的长度间隔开。至少一个具有可收回车轮(14)的中间桥置于其他桥之间。这个附加的桥可以改善在崎岖地面上的可操纵性。车轮(14)可以在水上和/或在陆地上被收回。车轮(12)也可以被收回。一个或多个桥可以全时或可选择地被驱动。所述车辆可以在水上滑行，且可以具有 V 型船体(11)。船用推进可以借助喷射式驱动器。车轮(14)可以垂直地收回或绕所述车辆的一条纵向轴线以弧形收回。可以使用滑移转向。可以装配挡泥板、车顶以及用于车轮的收回导向构件(滑道 16)。成对的滑道可以提供车顶支撑。可以设有平头驾驶位置。

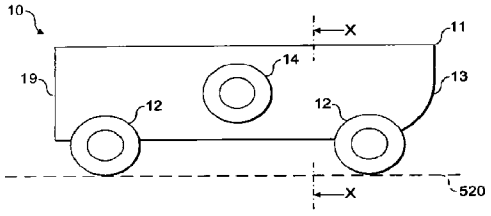


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1.一种在陆地上和在水上使用的水陆两用车辆，其包括陆地推进装置和船用推进装置，其中所述陆地推进装置包括至少两个沿所述车辆的长度间隔开的桥和位于其间的至少一个中间桥，所述至少一个中间桥支撑至少一个车轮，所述车轮可以被收回到车辆吃水线上方，以便所述车辆在水上和/或在陆地上使用。

2.权利要求 1 所述的水陆两用车辆，其中所述至少两个沿所述车辆的长度间隔开的桥各支撑至少一个车轮，所述车轮可以被收回到车辆吃水线上方，以便所述车辆在水上和/或在陆地上使用。

3.权利要求 1 或 2 所述的水陆两用车辆，其中一个或多个所述桥是驱动桥。

4.前述权利要求中任一项所述的水陆两用车辆，其中对于一个或多个所述桥的驱动是选择性的。

5.前述权利要求中任一项所述的水陆两用车辆，所述水陆两用车辆适合于在水上滑行。

6.前述权利要求中任一项所述的水陆两用车辆，包括 V 型船体。

7.前述权利要求中任一项所述的水陆两用车辆，其中所述船用推进装置包括至少一个喷射式驱动器。

8.前述权利要求中任一项所述的水陆两用车辆，其中至少一个所述间隔开的桥设在所述车辆的第一近端或前端处，并且至少一个所述间隔开的桥设在所述车辆的第二远端或后端处。

9.前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥朝向所述车辆的后部设置。

10.权利要求 1-8 中任一项所述的水陆两用车辆，其中所述至少一个中间桥朝向所述车辆的前部设置。

11.权利要求 2-10 中任一项所述的水陆两用车辆，其中所述至少一个中间桥的被支撑的所述至少一个车轮被设置为与所述至少两个间隔开的桥的被支撑的所述车轮沿一条纵轴排成一线，所述纵轴沿所述车辆前后延伸。

12.权利要求 2-10 中任一项所述的水陆两用车辆，其中所述至少一个中间桥的被支撑的所述至少一个车轮不与所述至少两个间隔开的

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桥的被支撑的所述车轮纵向地排成一线。

13. 前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥包括多个中间桥，每个所述中间桥支撑至少一个车轮并且独立于所述车辆的另一个中间桥或每个其他中间桥和/或其他桥可收回。

14. 权利要求 13 所述的水陆两用车辆，其中所述多个中间桥的被支撑的车轮沿一条纵轴互相排成一线，所述纵轴沿所述车辆前后延伸。

15. 权利要求 13 所述的水陆两用车辆，其中所述多个中间桥的被支撑的车轮不是纵向地互相排成一线。

16. 前述权利要求中任一项所述的水陆两用车辆，其中所述陆地推进装置通过机械传动装置提供动力。

17. 权利要求 1-15 中任一项所述的水陆两用车辆，其中所述陆地推进装置通过电传动装置提供动力。

18. 权利要求 1-15 中任一项所述的水陆两用车辆，其中所述陆地推进装置通过液压传动装置提供动力。

19. 权利要求 1-15 中任一项所述的水陆两用车辆，其中所述陆地推进装置通过包括机械和液压构件的传动装置提供动力。

20. 权利要求 19 所述的水陆两用车辆，其中所述液压构件包括液压车轮马达。

21. 前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥基本垂直地可收回。

22. 前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥围绕沿所述车辆的长度前后延伸的一个或多个轴线可收回，使得每个中间桥以弧形的方式绕所述轴线收回。

23. 权利要求 22 所述的水陆两用车辆，其中所述至少一个中间桥的轴线的收回位置基本垂直于其伸出位置。

24. 前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥通过带螺纹的驱动器收回。

25. 权利要求 1-23 中任一项所述的水陆两用车辆，其中所述至少一个中间桥通过液压油缸或气压缸收回。

26. 权利要求 25 所述的水陆两用车辆，其中所述液压油缸或气压缸还提供车辆悬架弹性。

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27.权利要求 25 或 26 所述的水陆两用车辆，其中所述液压油缸或气压缸还提供车辆悬架阻尼。

28.前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥具有导向构件，所述导向构件位于连接到主车辆结构的管中，所述管引导所述至少一个中间桥的收回。

29.权利要求 28 所述的水陆两用车辆，其中所述管通过连接构件横跨该车辆的宽度成对地互相连接。

30.权利要求 1-27 中任一项所述的水陆两用车辆，其中所述至少一个中间桥具有导向构件，所述导向构件位于连接到主车辆结构的滑道中，所述滑道引导所述至少一个中间桥的收回。

31.权利要求 30 所述的水陆两用车辆，其中所述滑道通过连接构件横跨车辆的宽度成对地互相连接。

32.权利要求 29 或 31 所述的水陆两用车辆，其中车罩或车顶连接到所述连接构件。

33.前述权利要求中任一项所述的水陆两用车辆，其中所述至少一个中间桥的一个车轮或多个车轮具有挡泥板，所述挡泥板安装在所述车轮上方。

34.权利要求 33 所述的水陆两用车辆，其中所述挡泥板被连接以与所述至少一个中间桥一起收回。

35.前述权利要求中任一项所述的水陆两用车辆，其中所述车辆设有平头驾驶位置。

36.前述权利要求中任一项所述的水陆两用车辆，其中支撑至少一个车轮的所述、一些或每个所述至少一个中间桥可以在陆地上使用的车辆中独立地收回，或者为使所述车辆在陆地上使用而独立地收回。

37.前述权利要求中任一项所述的水陆两用车辆，其中支撑至少一个车轮的所述、一些或每个所述至少一个中间桥可以用于转向所述车辆。

38.前述权利要求中任一项所述的水陆两用车辆，其中，为使所述车辆转向，支撑至少一个车轮的所述、一些或每个所述至少一个中间桥可以被停止或制动。

39.前述权利要求中任一项所述的水陆两用车辆，其中，为使所述

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车辆转向，支撑至少一个车轮的所述、一些或每个所述至少一个中间桥可以反转。

40. 一种在陆地上和在水上使用的水陆两用车辆，其包括陆地推进装置、船用推进装置、至少两个沿所述车辆的长度间隔开的车轮以及位于其间的至少一个中间车轮，其中所述至少一个中间车轮在所述车辆在水上和/或在陆地上的使用中可收回。

41. 权利要求 40 所述的水陆两用车辆，其中所述至少两个沿所述车辆的长度间隔开的车轮在所述车辆在水上和/或在陆地上的使用中可收回。

42. 前述权利要求中任一项所述的水陆两用车辆，其中在所述车辆在水上和/或在陆地上的使用中，每个可收回的车轮独立于其他每个可收回的车轮可收回。

43. 前述权利要求中任一项所述的水陆两用车辆，其中在所述车辆在水上和/或在陆地上的使用中，每对可收回的车轮独立于其他每个可收回的车轮或其他每对可收回的车轮可收回。

44. 一种基本如上文参照附图 1-11 中的任意一幅或多幅所述或如附图 1-11 中的任意一幅或多幅所示的水陆两用车辆。

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水陆两用车辆

技术领域

本发明涉及一种水陆两用车辆，并且尤其涉及一种设有至少一个中间桥的水陆两用车辆，所述中间桥支撑可收回到车辆吃水线上方的车轮。

背景技术

桥在常规越野车辆中的布置是在纵向通过角与接近角及离去角之间的折衷。图 12 示出了车辆 500 的这些角。前轮 503 装在前桥上，后轮 504 装在后桥上。桥必须从车辆的外端 505、506 插入从而给出可接受的纵向通过角 507，但是这由于减小了接近角 501 和离去角 502 而限制了机动性。另外常见的是，从保险杠插入桥从而构建用于吸收冲击的可挤压空间。然而，在首先关注越野机动性的情况下，装配一个或多个中间桥就使纵向通过角 507 成为不相关的概念，每个中间桥支撑车轮且设在前桥和后桥之间。车辆将不会使桥之间的底梁着地，因为附加的一个或多个车轮在该处用来支撑车辆。这允许前桥和后桥向保险杠突出，使接近角 501 和离去角 502 最大化。

多桥越野车在越野路面具有很多优势，但是在道路上受限。在使用单桥转向的情况下这些车辆可能遭受轮胎磨损；而多桥转向增加了复杂性、重量以及成本。这些车辆经常有噪声，通常耗费大量燃料。在军民关系经常紧张的年代，对军用车辆进行改造而使其沿着公共道路经过时较不惹人注意且不太可能引起反感，这样的改造是主要优势。

四轮车辆可以通过在冲击和回弹模式下提供低压轮胎和延长的悬架行程而适合于越野使用（例如，参见 www.amphibiousvehicle.net 上的 the Doliner Go-Devil）。但是，这些改造可能限制在道路上的速度、经济性以及易操纵性。提供可收回的中间桥使轮胎和悬架能够更适于道路使用，并且可以避免使用在道路上具有速度限制的低压轮胎。

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发明内容

第一发明点，本发明提供一种在陆地上和在水上使用的水陆两用车辆，其包括陆地推进装置和船用推进装置，其中所述陆地推进装置包括至少两个沿车辆的长度间隔开的桥和位于其间的至少一个中间桥，所述至少一个中间桥支撑至少一个车轮，所述车轮可以被收回到车辆吃水线上方，以便所述车辆在水上和/或在陆地上使用。

第二发明点，本发明提供一种在陆地上和在水上使用的水陆两用车辆，其包括陆地推进装置、船用推进装置、至少两个沿车辆的长度间隔开的车轮以及位于其间的至少一个中间车轮，其中所述至少一个中间车轮可收回，以便该车辆在水上和/或在陆地上使用。

根据本发明的其他发明点，提供一种如附带的权利要求中所述的水陆两用车辆。

附图说明

现在将参照附图仅以示例的方式对本发明的优选实施方案进行说明，其中：

图 1 是根据本发明的水陆两用车辆的第一个实施方案的侧向示意图，该车辆处于陆地上且所有桥均伸出；

图 2 是图 1 的水陆两用车辆沿 X-X 截取的横剖面示意图；

图 3 是图 1 的水陆两用车辆的侧向示意图，该车辆处于陆地上且中间桥被收回；

图 4 是图 3 的水陆两用车辆沿 X-X 截取的横剖面示意图；

图 5 是图 1 的水陆两用车辆的侧向示意图，该车辆处于水上且所有桥均被收回；

图 6 是根据本发明的水陆两用车辆的第二实施方案的侧向示意图，该车辆处于陆地上且设有两个中间桥；

图 7 是根据本发明的水陆两用车辆的另一实施方案在第一状态下的横向剖面示意图；

图 8 是图 7 的水陆两用车辆在第二状态下的横剖面示意图；

图 9 是根据本发明的水陆两用车辆的又一实施方案的横剖面示意图；

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图 10 是根据本发明的水陆两用车辆的立体图，该车辆用于水上且所有桥均被收回；

图 11 是图 10 的水陆两用车辆的另一立体图，该车辆用于陆地上且所有桥均伸出；以及

图 12 是现有技术车辆的侧向示意图。

具体实施方式

图 1 示出了一个水陆两用车辆 10，该水陆两用车辆具有以船体 11 为形式的主车辆结构。该车辆具有前部（船首）13 和后部（船尾）19。车辆 10 在陆地上通过沿船体 11 的两侧纵向设置的车轮 12、14 而被推进。各车轮 12、14 被支撑在可收回的桥（未示出）上。车轮 12、14 可以均为驱动轮，或者可以包括一个或多个驱动轮以及一个或多个从动轮。车辆 10 可以常规地使用前轮转向和/或通过独立地操纵在船体 11 两侧的车轮 12、14 来转向（例如，通过将特定车轮制动或反转，即通过滑移转向（skid-steer））。

这种布置在越野路面上是有利的，在越野路面上，车轮 12、14 可能附着在地形表面，甚至附着于崎岖地形上。尤其在硬质路面上，与履带车辆相比，车轮 12、14 允许改进的转向。

如图 2 所示，船体 11 是 V 型的船体。车辆 10 另外还具有用于在水上行进的船用推进装置。该船用推进装置优选地以至少一个喷射式驱动器（未示出）为形式。该喷射式驱动器能够产生足够的推力从而允许该车辆 10 在水上滑行。

图 2 示出了在图 1 中所示的水陆两用车辆 10 在位置 X-X 处从前向后看的剖面示意图。支撑车轮 14 的每个中间桥具有至少一个位于一个或多个滑道 16 中的导向构件。滑道 16 邻近船体 11 基本垂直地延伸，并且允许支撑车轮 14 的中间桥基本垂直地被升起或降下。滑道 16 可以是管的形式。滑道 16 横跨车辆 10 的宽度而成对布置。成对的滑道 16 可以通过连接构件（未示出）横跨车辆 10 的宽度互相连接。

液压油缸（未示出）连接到支撑车轮 14 的中间桥，并且可操作 用来在滑道 16 中升起或降下支撑车轮 14 的中间桥。支撑车轮 14 的中间桥可被升起，直至这些中间桥在车辆 10 的吃水线上方。这使车辆 10

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能够在不受支撑车轮 14 的中间桥的干扰或阻力的情况下在水上滑行。支撑车轮 14 的中间桥可升起到任一舷的高度上方。所有伸出的操作都与所述的收回的操作相反。

液压油缸可以另外提供用于车辆 10 的悬架弹性。如从通过参引纳入本说明书的 WO 01/74612 已知，液压连杆可以另外为车辆提供悬架阻尼。

一个车罩或车顶（未示出）可以由滑道 16 支撑。该车罩或车顶可以连接到连接构件上。该车罩可以在军事冲突中为车辆乘员提供身体保护，例如提供保护免遭敌人火力。

图 3 示出了图 1 的水陆两用车辆，其中支撑车轮 14 的中间桥已经被向上升起（被收回）。支撑车轮 14 的中间桥被升起在车辆 10 的吃水线 540 的高度上方（见图 5）。在车轮 12 处于地面上的情况下，常规的支撑车轮 12 的前桥和后桥显示处于伸出状态，从而对车辆 10 进行驱动和转向。该状态在道路上是有利的，在道路上，车轮 12 允许相对快速、平缓地行进并且允许水陆两用车辆 10 的平稳转向。

图 4 示出了图 3 所示的水陆两用车辆 10 在位置 X-X 从前向后看的剖面示意图。支撑车轮 14 的每个中间桥显示处于收回位置。车轮 12 也可以在滑道 16 中升起，或者通过任意其它用于将车轮收回的装置而升起。

图 5 示出回收的前部和后部车轮 12 以及中间收回车轮 14。这使该水陆两用车辆 10 能够在水上行进，在水上该车辆由喷射式驱动器推进。车轮 12、14 被升起在吃水线 540 上方，从而使该车辆 10 能够在水上滑行而不受车轮 12、14 的干扰。

图 6 示出了水陆两用车辆 110 的第二实施方案。车辆 110 设有船体 111，该船体具有前部（船首）113 和后部（船尾）119。车辆 110 具有一对前轮 124 和一对后轮 126（均示为收回）。支撑车轮 128 的两对中间桥位于前轮 124 和后轮 126 之间，每对车轮 128 位于车辆 110 的每一侧（均示为伸出）。前轮 124 和后轮 126 以及支撑车轮 128 的中间桥中的任一个或所有均可以在滑道上或者如上文关于图 2 和 4 所述而被独立地升起或降下。图 6 示出了在吃水线 540 上方处于收回状态的前轮 124 和后轮 126，且示出了在船体 111 下方延伸而处于伸出位

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置的支撑车轮 128 的中间桥。显示了车辆 110 通过车轮 128 站立在地面 520 上。该布置在特定的越野路况下是有利的，在该路况下，车轮 128 可以附着地形表面，甚至附着于崎岖地形上。

在上述实施方案中，所有车轮 12、14；124、126、128 都可以被驱动。可选择地，只有前轮或后轮 12；124、126 可以被驱动。前轮 12；124、后轮 12；126，或者所有道路车轮 12、14；124、126、128 可以用于车辆 10；110 在陆地上的转向。至少车轮 12、14；124、126、128 可以特别地被驱动、被停止（被制动）或被反转从而使该车辆 10；110 转向。

图 7 示出了一种用于将支撑车轮 14 的中间桥升起和降下的可选择的装置。这可以在任一前述实施方案中使用。支撑车轮 14 的中间桥装在支撑构件 30 上。当支撑车轮 14 的中间桥处于降下的位置时，该支撑构件 30 从主结构垂直向下延伸。

如图 8 所示，该支撑构件 30 可枢转地连接到主结构，使得支撑车轮 14 的中间桥能够以弧形横向向外地摆动。支撑车轮 14 的中间桥绕一条或多条沿车辆 10 基本纵向地延伸的轴线转动。该支撑构件 30 可以枢转至水平朝向，以便将支撑车轮 14 的中间桥提升而远离船体 11 并且在车辆 10 的吃水线 540 上方。因此，该收回位置基本垂直于伸出位置。当在水上时，处于收回位置的车轮 14 可以作为用于水陆两用车辆 10 的护板。

所有车轮 12、14；124、126、128 也可以通过上述弧形的转动而被升起或降下。

如图 9 所示，挡泥板 52 或防飞溅板 52 可以设在支撑车轮 14 的中间桥上方。挡泥板 52 可以刚性地连接到船体 11 上，使得当支撑车轮 14 的中间桥被升起和降下时挡泥板 52 不会移动。可选择地，该挡泥板 52 可以连接到支撑车轮 14 的中间桥和/或连接到滑道，使得该挡泥板 52 随支撑车轮 14 的中间桥一起被升起或降下，从而与车轮 14 保持固定距离。

图 10 示出了在所有车轮 12、14 都被收回的状态下在水上滑行使用的车辆 10。

图 11 示出了在所有车轮 12、14 都被伸出的状态下在陆地上使用

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的车辆 10。

任意实施方案中的车轮都可以通过机械传动装置提供动力（从而提供驱动）。可选择地，车轮也可以由电传动装置或液压传动装置提供动力。可选择地，车轮可以由包括机械和液压构件的传动装置提供动力。液压构件可以是液压车轮马达。

任一实施方案的车轮可以在水上被降下；或在例如港口或码头的拥挤空间中限制速度；为准备登陆；或在诸如沼泽的区域中，在该处水深不可预知并且不断变化。此外，在沼泽中茂密的海生物可能阻塞水喷射器入口。

虽然设想根据本发明的车辆应该能够在水上倒退，但是具有渐缩的船首和截断的船尾的典型滑行船体的形状指示出一个向前的行进方向，因为在各方向上遭遇的流体动力学阻力非常不同，所以车辆在该向前的行进方向上比在倒退方向上行进快得多。一般而言，水陆两用车辆具有与道路车辆或船只近似的尺寸比例，其长度为其宽度的大约 1.5-5 倍，优选地 2.5-4 倍。在此，对道路车辆宽度的实际的及法规的限制是主要影响因素；同样该船体的流体动力学特性也是影响因素。水陆两用车辆的常规行进方向沿其长度。

在说明书中提及了车辆的“主结构”的地方，这应该被认为是供船舶使用的船体并被认作是供陆地使用的车身。

任一所述实施方案可以从一个在车辆前部并且优选地在发动机前面的“平头”（“forward control”）驾驶位置进行操作。在这样的车辆中，很少有车身结构在风挡玻璃前面--可能地只有一个保险杠。这样的驾驶位置在陆地上和水上都提供了良好的可见性。明显的缺点在于在军事应用中使敌人火力可见；以及在碰撞情况下在驾驶员前方缺乏可挤压的结构。

喷射式驱动器已被描述用于为水上的车辆提供驱动力。可选择地，可以使用船用舷外挂机或者一个或多个推进器。提供船用舷外挂机更加易于从专用道路车辆转换。可选择地，该车辆可以具有两个或更多个用于在水上推进的喷射式驱动器。

前轮、中间轮以及后轮已被描述为被驱动用于在陆地上驱动车辆。可选择地，特定车轮可以选择性地被驱动或者根本不被驱动。

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液压油缸已被描述为升起或降下支撑车轮的中间桥。可选择地，支撑车轮的中间桥可以通过带螺纹的驱动器、液压马达或其它适当的装置移动。可选择地，支撑车轮的中间桥可以通过气压缸或其它加压空气致动装置而升起或降下。另外，气压缸可以提供用于车辆的悬架弹性。气压缸可以附加地为车辆提供悬架阻尼。

枢转的连杆臂或其它联动装置可以按要求在致动装置和中间桥和/或车轮之间使用。

支撑车轮的中间桥已被描述为安装在船体的每一侧。可选择地，支撑车轮的单一中间桥可以设在该船体的中心线下方中央。可选择地，可设有三个支撑车轮的中间桥，在该船体两侧各设一个且在该船体中心线下方设一个。支撑车轮的中间桥可以或者如所示位于船体的两侧，或者部分地或全部地安装在船体下方。

一对前轮和一对后轮已被描述。可选择地，该车辆可以具有一对前轮和一个单独的中心后轮。可选择地，该车辆可以具有一对后轮和一个单独的中心前轮。可选择地，该车辆可以具有比所示任一特定的实施方案更多或更少的车轮，包括涉及的所述中间桥。例如，该车辆可以在每个桥上只设有一个车轮，也就是共总只有三个车轮。

从前文应理解的是，可以设有一个以上的中间桥。在每种情况下，每个和各个桥可以独立于另一个或多个桥被收回，包括设置多个中间桥的情况。此外，桥实际上可以包括两个短桥，在车辆每一相对侧各设一个，或只设置一个短桥，设置于该车辆一侧或另一侧或者其间位置。

在说明书中提及的术语“桥”或“桥（复数）”意味着一个或多个车轮可以绕其转动的物体。一个桥可以只包括一个被支撑在轮毂上或短桥上的车轮。可选择地，一个桥也可以包括两个被支撑在传统桥上的车轮。

尽管上文已经描述了水陆两用车辆的几个实施方案；任意一个或多个或所有所述（和/或在附加的权利要求中所声明的）特征能以独立的方式或多方面组合的方式提供在任一实施方案中。同样地，任意一个或多个所述特征可以被去除、代替和/或添加到任意所述的和/或所声明的特征组合。为免生疑问，任意实施方案的任意特征可以与任意

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实施方案的任意其它特征组合。

虽然本发明的优选实施方案已在上文中进行描述并且在附图中图解说明，但这些只是以示例的方式给出并且是非限制的。本领域的技术人员应意识到，在附加的权利要求中所陈述的本发明的范围内，可以实施多种替代方案。

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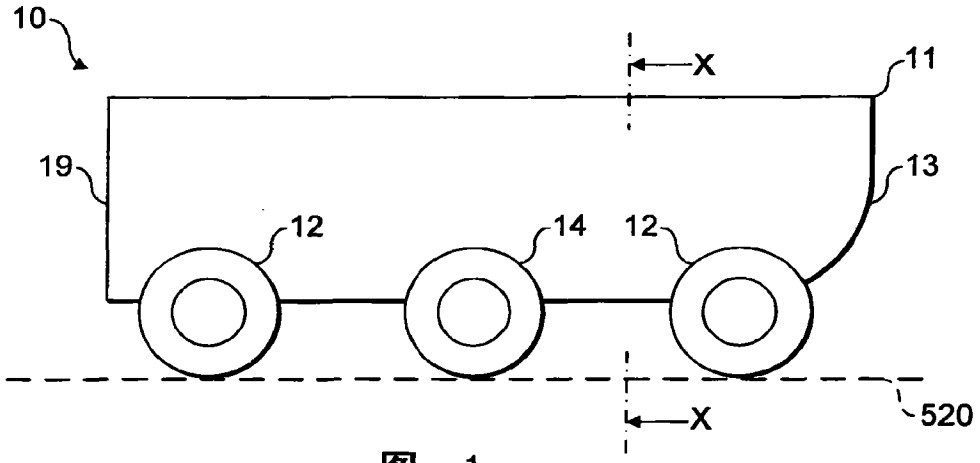


图 1

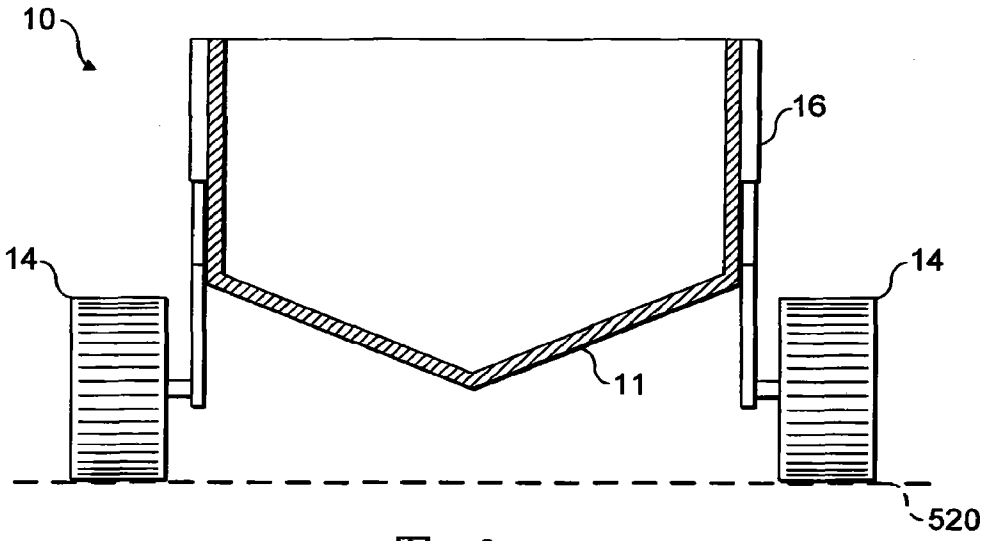


图 2

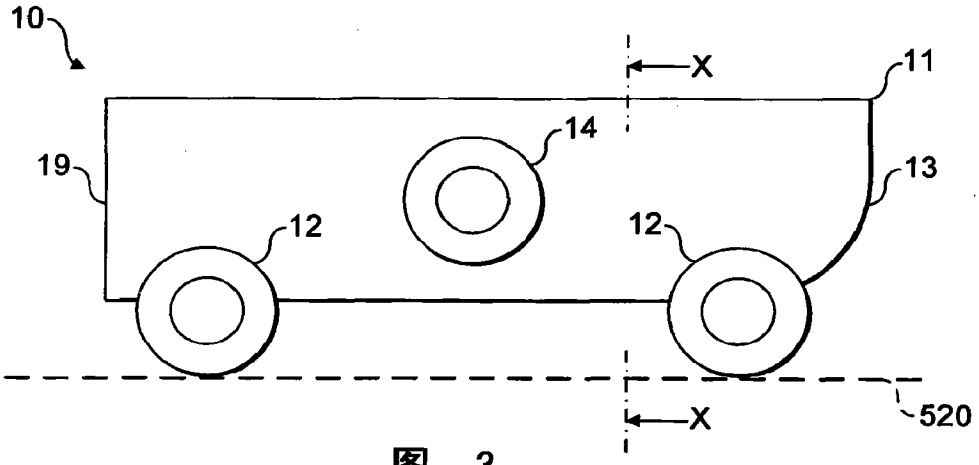


图 3

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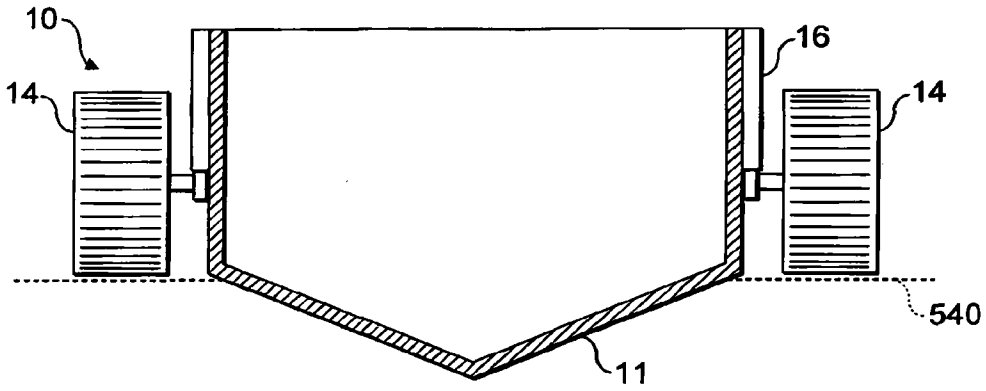


图 4

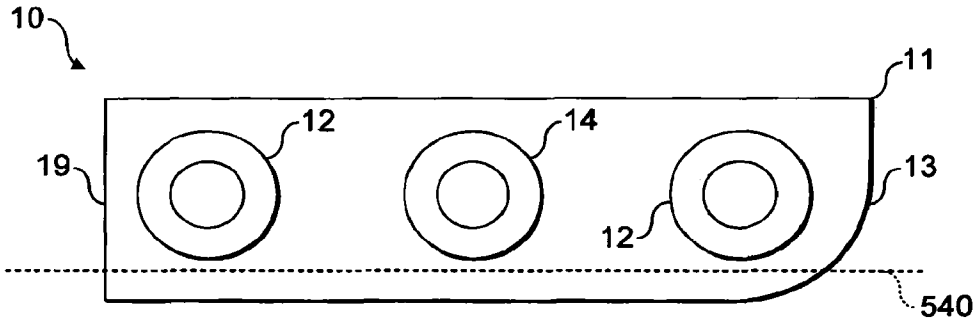


图 5

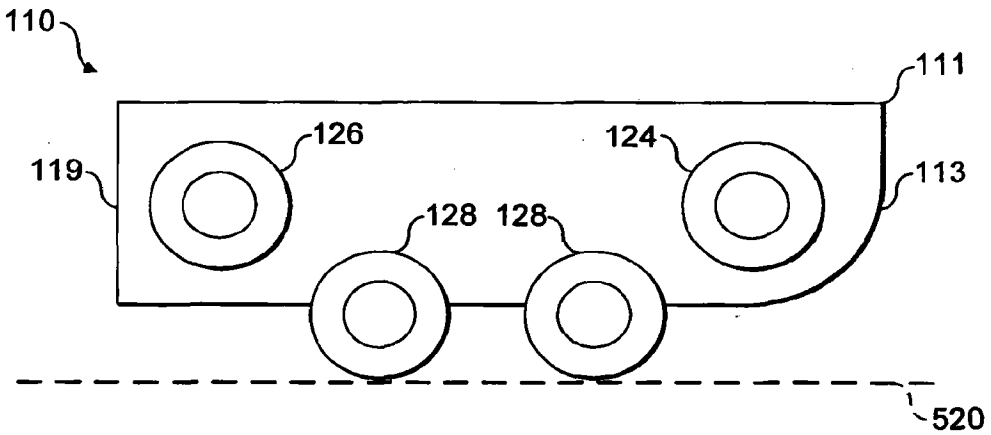


图 6

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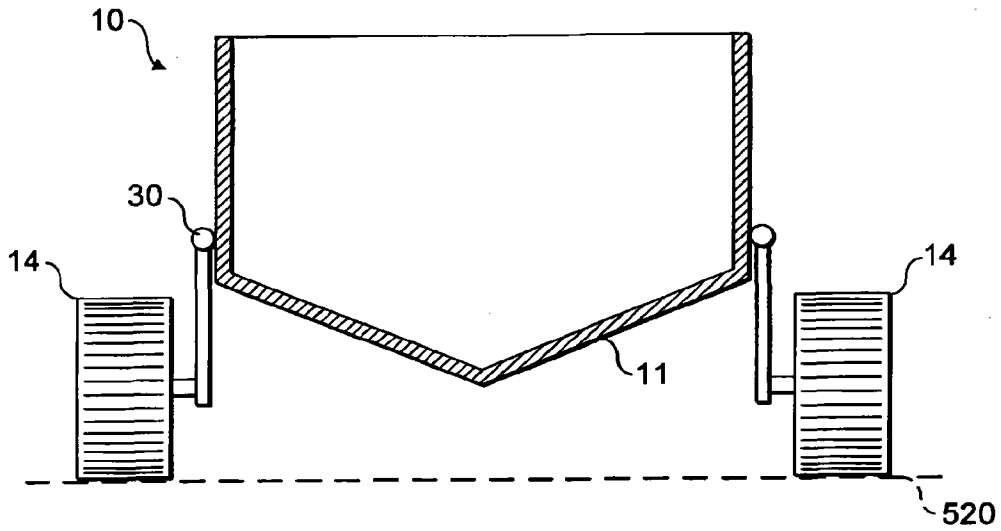


图 7

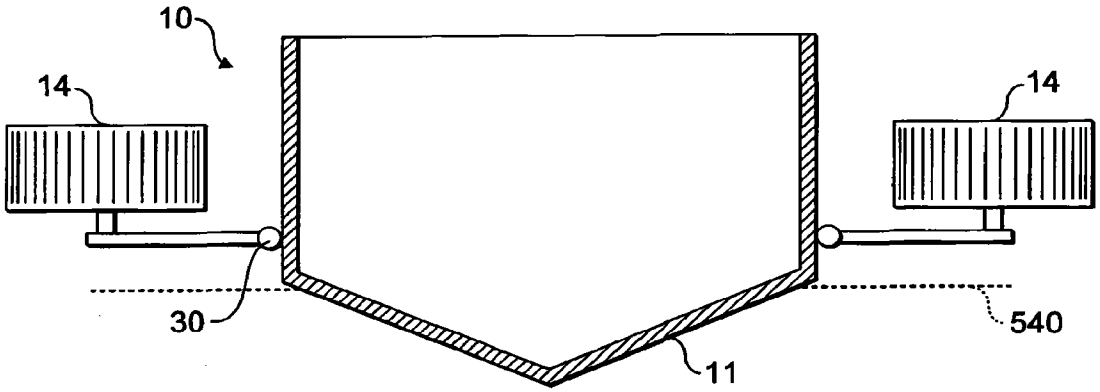


图 8

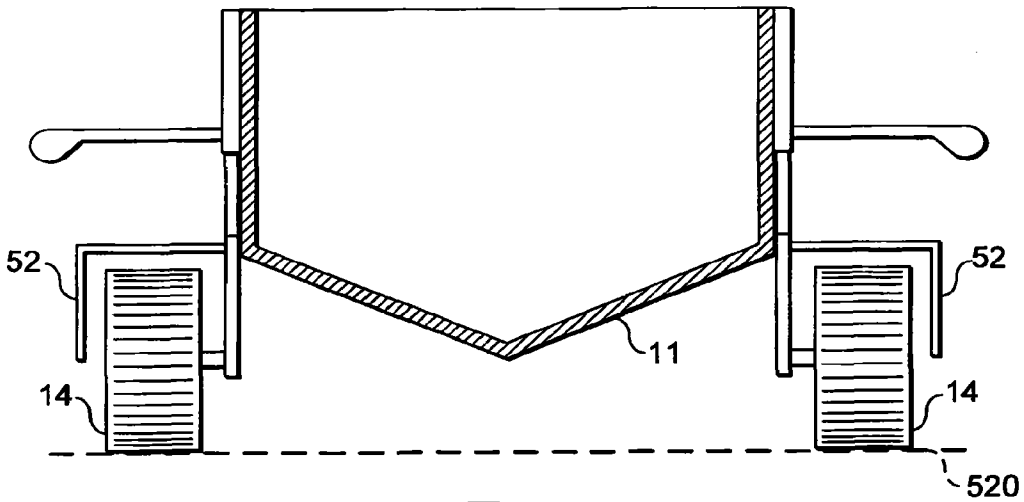


图 9

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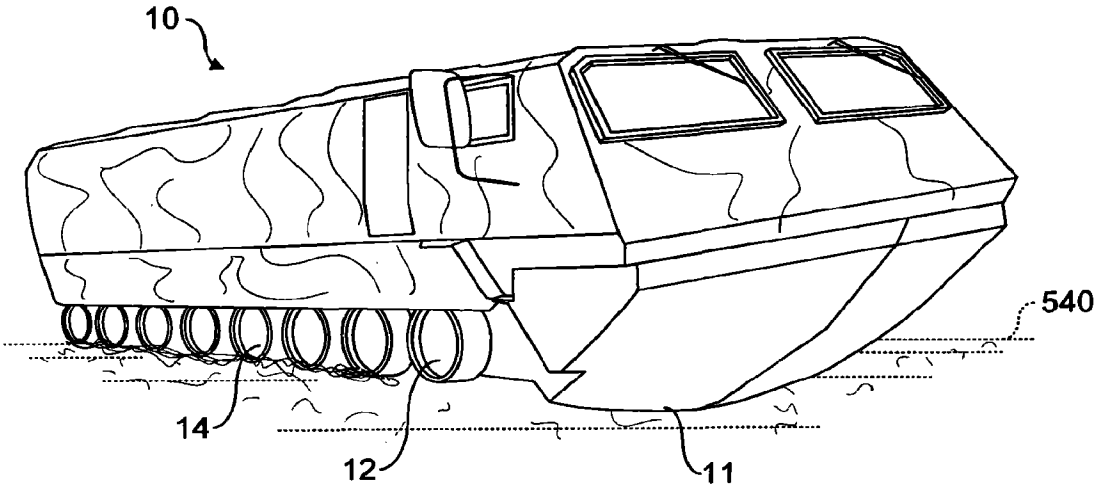


图 10

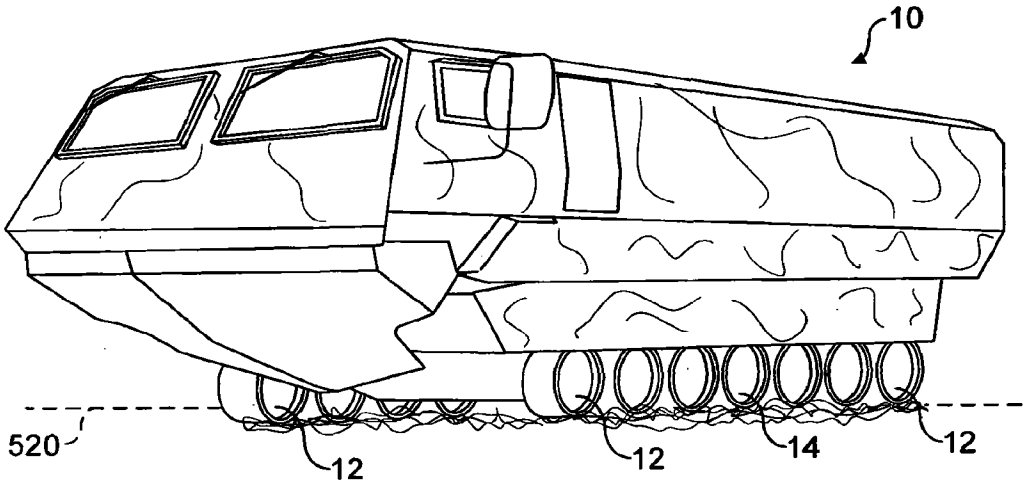


图 11

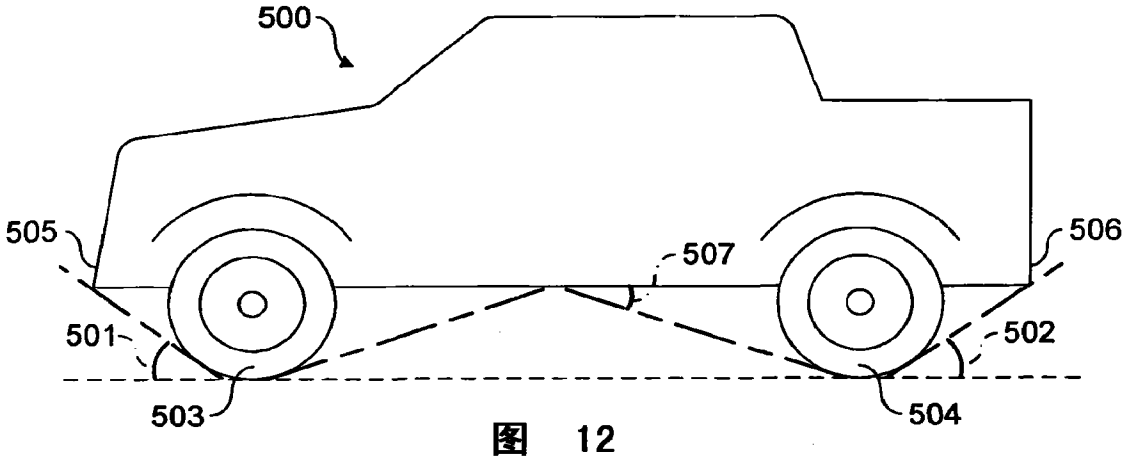


图 12

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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

BRUNET & CO. LTD.
1600-401 Bay St.
TORONTO, Ontario
Canada, M5H 2Y4

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	05 November 2014 (05-11-2014)
Applicant's or agent's file reference NUN-0007-PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. **PCT/CA2014/050789**	International filing date *(day/month/year)* 18 August 2014 (18-08-2014)
Applicant NUHN INDUSTRIES LTD.	

1. ☑ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

How? Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see *PCT Applicant=s Guide*, International Phase, paragraphs 9.004 B 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the any request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Within **19 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 819-953-2476	Authorized officer Carole Millaire (819) 994-6587

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BRUNET & CO. LTD.
1600-401 Bay St.
TORONTO, Ontario
Canada, M5H 2Y4

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	5 November 2014 (05-11-2014)
Applicant's or agent's file reference NUN-0007-PCT	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA2014/050789	18 August 2014 (18-08-2014)	19 August 2013 (19-08-2013)

International Patent Classification (IPC) or both national classification and IPC
IPC: ***A01C 23/00*** (2006.01), ***A01K 1/01*** (2006.01)

Applicant
NUHN INDUSTRIES LTD.

1. This opinion contains indications relating to the following items:

- ☑ Box No. I — Basis of the opinion
- ☐ Box No. II — Priority
- ☐ Box No. III — Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV — Lack of unity of invention
- ☑ Box No. V — Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI — Certain documents cited
- ☐ Box No. VII — Certain defects in the international application
- ☑ Box No. VIII — Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/CA	Date of completion of this opinion	Authorized officer
Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	04 November 2014 (04-11-2014)	Sam Abounehme (819) 997-2773

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Box No. I **Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☑ the international application in the language in which it was filed.

   ☐ a translation of the international application into which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed.

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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Bazooka v. Nuhn - IPR2024-00098
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Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims 1 - 20	YES
	Claims None	NO
Inventive step (IS)	Claims 1 - 20	YES
	Claims None	NO
Industrial applicability (IA)	Claims 1 - 20	YES
	Claims None	NO

2. Citations and explanations:

D1: CA2002619A1 (Dépault) 09 May 1991 (09-05-1991)

D2: DE3431345A1 (Bruse) 06 March 1986 (06-03-1986)

D3: US4594006A (Depeault) 10 June 1986 (10-06-1986)

D4: DE2364962A1 (Gleich) 03 July 1975 (03-07-1975)

D5: US4406413A (Houle) 27 September 1983 (27-09-1983)

Novelty (N)

Claims 1 - 20 are novel and do comply with Article 33(2) of the PCT. Document D1 is considered the closest prior art and discloses an agitator and pump assembly adapted to be trailed behind a vehicle and to be moved into a manure pond, wherein the apparatus includes a pump housing at the end of an elongated frame supported on a wheeled sub-frame. The wheeled sub-frame is pivotally connected near one end to a midpoint of the elongated frame. The pump housing includes a rotating bladed impeller having an axis of rotation which is at an acute angle to the elongated frame, and a screw pump extends above the housing for thrusting the material downwardly through the housing upon rotation thereof. The subject matter of these claims differs from the prior art in that D1 does not disclose a floatable vehicle body having ground engaging propulsion structure, the structure being configured to be raised and lowered relative to the vehicle body.

Inventive Step (IS)

Claims 1 - 20 do comply with Article 33(3) of the PCT. The subject matter of these claims is considered to involve an inventive step since the prior art does not disclose nor fairly suggest a floatable vehicle body having ground engaging propulsion structure, the structure is configured to be raised and lowered relative to the vehicle body.

Industrial Applicability (IA)

The subject matter of claims 1 - 20 is considered to be industrially applicable and thus complies with the requirements of Article 33(4) of the PCT.

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Bazooka v. Nuhn - IPR2024-00098
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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 1 does not comply with Article 6 of the PCT. The claim shall be clear and concise.
It is not clear from the expression "configured to raise and lower " what is being raised or lowered.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	see Form PCT/ISA/220 as well as, where applicable, item 5 below
NUN-0007-PCT		
International application No.	International filing date *(day/month/year)*	(Earliest)Priority date *(day/month/year)*
PCT/CA2014/050789	18 August 2014 (18-08-2014)	19 August 2013 (19-08-2013)

Applicant

NUHN INDUSTRIES LTD.

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☑ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language**, the international search was carried out on the basis of:

   ☑ the international application in the language in which it was filed.

   ☐ a translation of the international application into which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

   b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

   c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

   ☑ the text is approved as submitted by the applicant.

   ☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

   ☑ the text is approved as submitted by the applicant.

   ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may,within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

   a. the figure of the **drawings** to be published with the abstract is Figure No. 1

   ☑ as suggested by the applicant.

   ☐ as selected by this Authority, because the applicant failed to suggest a figure.

   ☐ as selected by this Authority, because this figure better characterizes the invention.

   b. ☐ none of the figures is to be published with the abstract.

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Bazooka v. Nuhn - IPR2024-00098
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2014/050789

A. CLASSIFICATION OF SUBJECT MATTER
IPC: ***A01C 23/00*** (2006.01) , ***A01K 1/01*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: A01C 23/00 (2006.01) , A01K 1/01 (2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
TotalPatent, Questel-Orbit

Search Terms: (manure) and IPC-1-8(A01C) and pump and nozzle and vehicle

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CA2002619A1 (Dépault) 09 May 1991 (09-05-1991)	1 – 20
A	DE3431345A1 (Bruse) 06 March 1986 (06-03-1986)	1 – 20
A	US4594006A (Depeault) 10 June 1986 (10-06-1986)	1 – 20
A	DE2364962A1 (Gleich) 03 July 1975 (03-07-1975)	1 – 20
A	US4406413A (Houle) 27 September 1983 (27-09-1983)	1 - 20

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 30 October 2014 (30-10-2014)	Date of mailing of the international search report 05 November 2014 (05-11-2014)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001-819-953-2476	Authorized officer Sam Abounehme (819) 997-2773

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Bazooka v. Nuhn - IPR2024-00098
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Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2002619A1	09 May 1991 (09-05-1991)	CA2002619A1	09 May 1991 (09-05-1991)
		CA2002619C	19 September 1995 (19-09-1995)
		US5100303A	31 March 1992 (31-03-1992)
DE3431345A1	06 March 1986 (06-03-1986)	None	
US4594006A	10 June 1986 (10-06-1986)	US4594006A	10 June 1986 (10-06-1986)
		CA1212937A1	21 October 1986 (21-10-1986)
DE2364962A1	03 July 1975 (03-07-1975)	DE2364962A1	03 July 1975 (03-07-1975)
		ATA947374A	15 November 1975 (15-11-1975)
		AT331547B	25 August 1976 (25-08-1976)
		FR2256330A1	25 July 1975 (25-07-1975)
		GB1493119A	23 November 1977 (23-11-1977)
US4406413A	27 September 1983 (27-09-1983)	US4406413A	27 September 1983 (27-09-1983)
		CA1126257A1	22 June 1982 (22-06-1982)

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Bazooka v. Nuhn - IPR2024-00098
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EXHIBIT H

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,076	05/06/2022	10974557	19061.0001USRX	3433

59115 7590 05/26/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER
KAUFMAN, JOSEPH A

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
05/26/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

DO NOT USE IN PALM PRINTER

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,076* .

PATENT UNDER REEXAMINATION *10974557* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting Request For Ex Parte Reexamination	Control No. 90/019,076	Patent Under Reexamination 10974557	
	Examiner JOSEPH A KAUFMAN	Art Unit 3993	AIA (FITF) Status Yes

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed 05/06/2022 has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☑ PTO/SB/08, c)☐ Other: ____

1. ☑ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

cc:Requester (if third party requester)

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DECISION

A substantial new question of patentability affecting claim 1-13 of United States Patent Number 10,974,557 is raised by the request for *ex parte* reexamination.

Service of Papers

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550(f).

Waiver of Right to File Patent Owner Statement

In a reexamination proceeding, Patent Owner may waive the right under 37 C.F.R. 1.530 to file a Patent Owner Statement. The document needs to contain a statement that Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement and proof of service in the manner provided by 37 C.F.R. 1.248, if the request for reexamination was made by a third party requester, see 37 C.F.R 1.550(f). The Patent Owner may consider using the following statement in a document waiving the right to file a Patent Owner Statement:

WAIVER OF RIGHT TO FILE PATENT OWNER STATEMENT

Patent Owner waives the right under 37 C.F.R. 1.530 to file a Patent Owner Statement.

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 10,974,557 throughout the course of this reexamination proceeding. Likewise, if present, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Substantial New Question of Patentability

It is agreed that Carrier (US Patent No. 7,478,817) raises a substantial new question of patentability regarding claims 1-13 of Nuhn. The prosecution history of the Nuhn patent indicates that the prior art of record did not teach the power source connected to the hydraulic pump and configured to provide power to both the ground engaging propulsion structure and the fluid pump. Carrier teaches these features as noted in the request on at least pages 23-24. Carrier is directed to an all-terrain vehicle that operates in both water/fluid and various solid/semi-solid surfaces.

The Carrier patent was not considered in the prosecution of the application that became the Nuhn patent. Further, there is a substantial likelihood that a reasonable examiner would consider the teachings in this reference important in deciding whether or not the claims are patentable. Therefore, Carrier raises a substantial new question of

patentability as to claims 1-13 which question has not been decided in a previous examination of what became the Nuhn patent.

In the Request, several additional references were listed and asserted to raise a substantial new question of patentability only as secondary references. Although the additional references were discussed in appropriate claim charts throughout the request, such additional references do not appear, in and of themselves, to raise any substantial new questions of patentability. The examiner does note, however, that while the references are not considered to raise SNQs by themselves, they will be considered during subsequent reexamination in the same manner as other documents in the Office search files, as well as to any additional degree in which the content and relevance of the information has been discussed or explained throughout the request.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

Please mail any communications to:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered.

By Mail to: Attn: Mail Stop "Ex Parte Reexam"
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P. O. Box 1450
Alexandria VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Attn: Central Reexamination Unit
Randolph Building, Lobby Level
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/JOSEPH A KAUFMAN/
Primary Examiner
Art Unit 3993

Conferees:/WCD/ /E.D.L/
SPRS, Art Unit 3993

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	2022-05-06
First Named Inventor	Ian Nuhn
Art Unit	
Examiner Name	
Attorney Docket Number	19061.0001USRX

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	7478817	B1	2009-01-20	Carrier	
	2	7833071	B2	2010-11-16	Gaither	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20130033070	A1	2013-02-07	Kinsman et al.	
	2	20140112093	A1	2014-04-24	Puck	
	3	20140288763	A1	2014-09-25	Bennett et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.A.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-05-06
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USRX

	1							

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/JOSEPH A KAUFMAN/	Date Considered	05/23/2022

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.A.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	2022-05-06
	First Named Inventor	Ian Nuhn
	Art Unit	
	Examiner Name	
	Attorney Docket Number	19061.0001USRX

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert A. Kalinsky/	Date (YYYY-MM-DD)	2022-05-06
Name/Print	Robert A. Kalinsky	Registration Number	50471

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.A.K/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,076	05/06/2022	10974557	19061.0001USRX	3433

59115 7590 05/25/2022

BRUNET & CO. LTD.
401 Bay St.
Suite 1600
Toronto, ONTARIO M5H 2Y4
CANADA

EXAMINER	
KAUFMAN, JOSEPH A	

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
05/25/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

MERCHANT & GOULD P.C.
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,076* .

PATENT UNDER REEXAMINATION *10974557* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Ex Parte Reexamination Interview Summary – Pilot Program for Waiver of Patent Owner's Statement	Control No. 90/019,076	Patent Under Reexamination is Requested 10974557	
	Examiner JOSEPH KAUFMAN	Art Unit 3993	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

All participants (USPTO official and patent owner):

(1) SHANETTE BROWN (3) _____

(2) _____ (4) _____

Date of Telephonic Interview: 18 May 2022.

A. The USPTO official requested waiver of the patent owner's statement pursuant to the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The patent owner **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

☐ The patent owner **did not agree** to waive its right to file a patent owner's statement under 35 U.S.C. 304 at this time.

☑ USPTO personnel were unable to reach the patent owner.**

B. The Patent Owner of record telephoned the Office and indicated they would like to participate in the pilot program for waiver of patent owner's statement in *ex parte* reexamination proceedings.*

☐ The Patent owner of record telephoned the Office and **agreed** to waive its right to file a patent owner's statement under 35 U.S.C. 304 in the event reexamination is ordered for the above-identified patent.

The patent owner is not required to file a written statement of this telephone communication under 37 CFR 1.560(b) or otherwise. However, any disagreement as to this interview summary must be brought to the immediate attention of the USPTO, and no later than one month from the mailing date of this interview summary. Extensions of time are governed by 37 CFR 1.550(c).

*For more information regarding this pilot program, see *Pilot Program for Waiver of Patent Owner's Statement in Ex Parte Reexamination Proceedings, 75 Fed. Reg.* 47269 (August 5, 2010), available on the USPTO Web site at http://www.uspto.gov/patents/law/notices/2010.jsp.

**The patent owner may contact the USPTO personnel at (571) 272-7705 or at the telephone number provided below if the patent owner decides to waive the right to file a patent owner's statement under 35 U.S.C. 304.

/SHANETTE BROWN/ (571)272-6632

Signature and telephone number of the USPTO official, who contacted, was contacted by, or attempted to contact the patent owner.

cc: Requester (if third party requester)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,076	05/06/2022	10974557	19061.0001USRX	3433

27572 7590 08/12/2022

HARNESS DICKEY (TROY)
5445 Corporate Dr.
Suite 200
Troy, MI 48098

EXAMINER
KAUFMAN, JOSEPH A

ART UNIT	PAPER NUMBER
3993	

MAIL DATE	DELIVERY MODE
08/12/2022	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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MINNEAPOLIS, MN 55402-0903

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/019,076* .

PATENT UNDER REEXAMINATION *10974557* .

ART UNIT *3993* .

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Office Action in Ex Parte Reexamination	Control No. 90/019,076	Patent Under Reexamination 10974557	
	Examiner JOSEPH A KAUFMAN	Art Unit 3993	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

a. ☐ Responsive to the communication(s) filed on _____.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

b. ☐ This action is made FINAL.

c. ☑ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☐ Information Disclosure Statement, PTO/SB/08.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☑ Claims 1-13 are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _____ are patentable and/or confirmed.
4. ☑ Claims 1-13 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ The drawings, filed on _____ are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a) ☐ approved (7b) ☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the certified copies have
   1 ☐ been received.
   2 ☐ not been received.
   3 ☐ been filed in Application No. _____.
   4 ☐ been filed in reexamination Control No. _____.
   5 ☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Service of Papers

After the filing of a request for reexamination by a third party requester, any document filed by either the patent owner or the third party requester must be served on the other party (or parties where two or more third party requester proceedings are merged) in the reexamination proceeding in the manner provided in 37 CFR 1.248. See 37 CFR 1.550(f).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Amendment in Reexamination Proceedings

Patent owner is notified that any proposed amendment to the specification and/or claims in this reexamination proceeding must comply with 37 CFR 1.530(d)-(j), must be formally presented pursuant to 37 CFR 1.52(a) and (b), and must contain any fees required by 37 CFR 1.20(c).

Submissions

In order to insure full consideration of any amendments, affidavits or declarations or other documents as evidence of patentability, such documents must be submitted in response to the first Office action on the merits (which does not result in a close of prosecution). Submissions after the second Office action on the merits, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116, after final rejection and by 37 CFR 41.33 after appeal, which will be strictly enforced.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 10,974,557 throughout the course of this reexamination proceeding. Likewise, if present, the third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

Claim Rejections - 35 USC § 102

In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

Claim(s) 1-13 is/are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Carrier (U.S. Patent No. 7,478,817).

Carrier shows a floatatable vehicle body 10, 12; ground engaging propulsion structure being wheels 60 (up to 12 seen in Figure 2); fluid pump discussed in column 4 lines 20-32; fluid nozzle(s) and conduit discussed in column 9, lines 13-30; power source 18 connected to a hydraulic pump(s) (column 6, lines 41-46) to provide power to both the ground engaging propulsion structure and the fluid pump(s); and a remote control structure 42 that provides the claimed functions.

Carrier also shows an endless track seen in Figure 2a; the variable speed is discussed in column 7 line 42-column 8 line 15; and a plurality of nozzles discussed in column 9, lines 26-30.

Note, the type of material pumped is intended use and the Carrier device is clearly capable of pumping manure. Further, the positioning of the various components would impact the center of gravity and the term “desired location” does not provide any discernable boundaries or limitations.

Other references cited for use in rejections illustrate features already discussed in Carrier and are therefore considered cumulative. These references are not deemed

necessary at this time. The examiner could reconsider using these additional references based on Patent Owner's response to this action.

Conclusion

All correspondence relating to this *ex parte* reexamination proceeding should be directed as follows:

Please mail any communications to:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://efs.uspto.gov/efile/myportal/efs-registered.

By Mail to: Attn: Mail Stop "Ex Parte Reexam"
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P. O. Box 1450
Alexandria VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By Hand: Customer Service Window
Attn: Central Reexamination Unit
Randolph Building, Lobby Level
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i)(C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:/JOSEPH A KAUFMAN/
Primary Examiner, Art Unit 3993

Conferees:/WILLIAM C DOERRLER/
Reexamination Specialist, Art Unit 3993

/EILEEN D LILLIS/
SPRS, Art Unit 3993

EXHIBIT K

'425 Reexamination – Ground 2
Carrier I (US 2012/0185129) & Puck (2014/0112093)
35 U.S.C. §103

Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
1. An amphibious vehicle comprising:	**[003]** The present invention relates to a multi-purpose all-terrain vehicle. More specifically, the present invention is directed to an all-terrain hostile environment vehicle equipped with various aid units such as quick exchange medical, hazardous material, construction, search, rescue, com-munications, fire fighting, tracking and weapon units which can be deployed in remote areas or areas not accessible by paved roads. **[0009]** It is an object of the invention to provide an improved all-terrain vehicle. **[0010]** An object is to provide for a multi-independent drive wheel system for an all-terrain vehicle. **[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform. **[0058]** The vehicle 100 is designed to be drivable on uneven ground, on mud, through deep water, or on other surfaces a regular automobile or truck cannot be driven on. To achieve this effect, the vehicle can be relatively lightweight, having eight, ten or twelve-wheel drive or more, which can prefer-ably be sealed against water intrusion to critical engine and transmission parts. Weight reduction can be achieved by using various polymers which also have ballistic proof capa-bility. **[0074]** Each of the structural components can preferably be made of ballistic proof material, steel or other suitable material to enable the multiple functions of land and water use to be carried out. Each of the units described is exemplary for use with the invention and not intended to so limit the invention, rather modifications of these units are intended to be covered hereby. **[0079]** The hull (bottom section) of the vehicle 100 can preferably be shaped in such a configuration as that of a boat in a slight curved V shape with angles from 1 degree to 95 degrees and may be greater that accomplish two separate tasks. (Task!) The hull of vehicle 100 can facilitate amphibious operations that accomplish three different sub tasks being (1) eliminating water drag on the	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	vehicle as it moves through the water, (2) water build up distribution in front of and to the sides of the vehicle 100 (which slows the movement and turning capabilities of the vehicle 100), (3) significantly enhances both the movement directional speed i.e. forward or reverse and significantly enhances the turning capabilities left or right as well of vehicle 100. (Task 2) Upper body 105 and lower body 107 of vehicle 100 can facilitate land and sea borne operations in relationship to ballistic resistant proper-ties and Explosive Energy Dispersion, (EED), in relationship to IED's (Improvised Explosive Devices) and other explosive devices i.e. (land mines and or water mines), that accomplish two sub tasks. (Sub-Task 1) The hull uses angles of 1 degree to 95 degrees or greater significantly enhance ballistic pro-jectile defeat by creating a ricochet effect thereby increasing the effectiveness of the used method of armor. Using varying degrees of angles in different configurations using different thicknesses within the armors configuration can create a pocket and or channel the trajectory path of the munition into this pocket to catch or trap the munition or channel and deflect the munition into a different trajectory away from a crucial portion of the vehicle 100. (Sub-Task 2) The hull can use the same 1 degree to 95 degree angles or greater incorporated into configuration geometry into both the upper and lower body of vehicle 100 which accomplishes explosive blast energy dis-persion away from the vehicle 100. The lower body of vehicle 100 would also incorporate blast ducts using 1 degree to 95 degree angles in a shape configuration of duct channels formed within or incorporated onto the lower body of vehicle 100 that would give the energy and or pressure release of the blast a directional path to follow leading away from the vehicle 100 and critical components of the underbody and side components of the vehicle	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	100 such as wheel mounting hubs, tires and other critical components.	
A floatable vehicle body	**Abstract:** A first chassis and second chassis hingedly connects to the first chassis, wherein each of the first and second chassis includes a plurality of wheels which are operably connected to a hydraulic motor. The hydraulic motor operably connects to an engine which is operably connected to the first chassis. A transmission pump operably interconnects the hydraulic motor and the engine and a flow divider operably interconnects the transmission pump and the hydraulic motor to regulate hydraulic flow to the hydraulic motor.	**Abstract:** A floating manure agitator that floats on the surface of a manure lagoon and that may be remotely controlled to agitate manure supernatant into a slurry with sludge settling on the bottom of the lagoon. The agitator is provided with a plurality of fluid outputs, the direction of which may be controlled to motivate and steer the agitator. The outputs are angled to develop vortices of supernatant into the sludge to further mix the materials into a slurry. **[0001]** The present invention relates in general to a manure agitator and, more particularly, to a floating manure agitator for use in association with a manure lagoon. **[0006]** It is also known in the art to provide a large vehicle that may be lowered into the lagoon. The vehicle may equipped with a fluid intake, a pump and a fluid output to draw supernatant into the pump and force the supernatant at high speed downward toward the sludge. The vehicle is typically moved with cables by operators on the shore.

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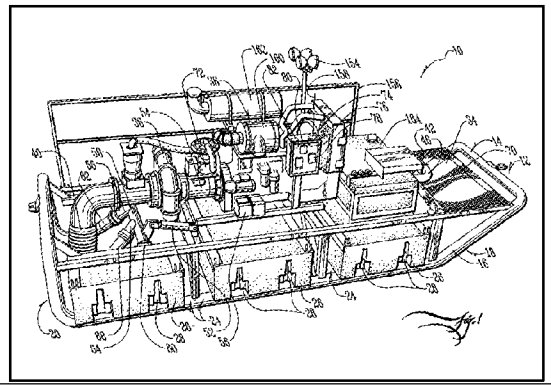
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0026] In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform.	[0008] It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant, while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air. **Figure 1:** 

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Bazooka v. Nuhn - IPR2024-00098
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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0058] The vehicle 100 is designed to be drivable on uneven ground, on mud, through deep water, or on other surfaces a regular automobile or truck cannot be driven on. To achieve this effect, the vehicle can be relatively lightweight, having eight, ten or twelve-wheel drive or more, which can prefer-ably be sealed against water intrusion to critical engine and transmission parts. Weight reduction can be achieved by using various polymers which also have ballistic proof capa-bility. **[0079]** The hull (bottom section) of the vehicle 100 can preferably be shaped in such a configuration as that of a boat in a slight curved V shape with angles from 1 degree to 95 degrees and may be greater that accomplish two separate tasks. (Task!) The hull of vehicle 100 can facilitate amphibi-ous operations that accomplish three different sub tasks being (1) eliminating water drag on the vehicle as it moves through the water, (2) water build up distribution in front of and to the sides of the vehicle 100 (which slows the movement and turning capabilities of the vehicle 100), (3) significantly enhances both the movement directional speed i.e. forward or reverse and significantly enhances the turning capabilities left or right as well of vehicle 100. (Task 2) Upper body 105 and lower body 107 of vehicle 100 can facilitate land and sea borne operations in relationship to ballistic resistant proper-ties and Explosive Energy Dispersion, (EED), in relationship to IED's (Improvised Explosive Devices) and other explosive devices i.e. (land mines and or water mines), that accomplish two sub tasks. (Sub-Task 1) The hull uses angles of 1 degree to 95 degrees or greater significantly enhance ballistic pro-jectile defeat by creating a ricochet effect thereby increasing the effectiveness of the used method of armor. Using varying degrees of angles in different configurations using different thicknesses within the armors configuration can create a pocket	

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	and or channel the trajectory path of the munition into this pocket to catch or trap the munition or channel and deflect the munition into a different trajectory away from a crucial portion of the vehicle 100. (Sub-Task 2) The hull can use the same 1 degree to 95 degree angles or greater incorporated into configuration geometry into both the upper and lower body of vehicle 100 which accomplishes explosive blast energy dis-persion away from the vehicle 100. The lower body of vehicle 100 would also incorporate blast ducts using 1 degree to 95 degree angles in a shape configuration of duct channels formed within or incorporated onto the lower body of vehicle 100 that would give the energy and or pressure release of the blast a directional path to follow leading away from the vehicle 100 and critical components of the underbody and side components of the vehicle 100 such as wheel mounting hubs, tires and other critical components.	
Ground engaging propulsion structure comprising a plurality of ground engaging elements powered by a hydraulic motor;	**[0007]** There is a need for an all terrain vehicle to be as lightweight with variable alternative power to propel vehicle directional travel and be as mobile as possible, i.e. hydraulic, drive shaft, electric, hydraulic over electric, drive shaft over chain driven gear and or spiral worm gear and using variable fuel sources such as electrical, LP gases, gasoline, diesel, bio chemical and even nuclear fuels etc. There is a need for a solution for a quick directional travel change in the vehicle's steering mobility in the field. There is also a need for improved remote weapons systems. There is a further need for improved vehicle durability for an all-terrain vehicle, during periods of hostile environments such as forest fire or war. **[0024]** Accordingly, the present invention is an improve-ment on the prior invention and is directed to an all-terrain vehicle. One embodiment of the vehicle includes a first chas-sis and second	

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	chassis hingedly connected to the first chassis, each of the first and second chassis including a plurality of wheels which are operably connected to a hydraulic motor (or other propelling means, such as electric wheel). In this regard, the connection can be made for up and down movement (vertical) (oscillation) for unlevel terrain movement compen-sation and or cross hingedly connected for both up and down movement (vertical) (oscillation) as well as side to side move-ment (horizontal)(oscillation) for unlevel terrain movement compensation. The hydraulic motor is operably connected to an engine which is operably connected to the first chassis and can also be connected to the second chassis. **[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the	

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	system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform. **[0039]** Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCRS-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected to an engine 130 which can preferably be operably connected to the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine. **[0040]** Transmission and or tandem combination hydraulic pumps 132 and 134 can operably interconnect to the hydraulic (and or other propel means) wheel motors 124 and 126 and engine 130 via hydraulic lines 136A and 136B and 138A and 138B, wherein lines 136A and 138A can preferably connect to flow divider 140 and 142 (and or combination of flow divider manifolds) to regulate hydraulic flow to the wheel motors 124 and 126 and lines 136B and 138B are return lines to the respective pumps 132 and 134.	

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	[0041] There can be a plurality of flow dividers and or combination of flow divider manifolds 140 and 142 to regulate and distribute flow in the hydraulic lines 136A and 136B and 138A and 138B, respectively, to motors 124 and 126 on an equalized basis. Operably interposed between the flow dividers 140 and 142, pumps 132 and 134, and motors 124 and 126 are flushing valves 146 for flushing hydraulic fluid to aid in fluid cooling and excess fluid. [0042] FIGS. 5-7 depict half of the hydraulic system and thus it is understood that components not mentioned here are likewise operatively disposed in the vehicle 100. Recirculation valves 150 can be operably interposed between the wheel motors 124 and 126 and high speed shift valves 154 operably connect to one flow divider and or combination of flow divider manifolds 140. A second speed valve 156 and brake valve 157 can be operably interposed between pump 130 and one of each of the wheel motors 124 and 126. [0045] Importantly, the ability to control the power system provides for counter rotation of wheels 120 and 122 (e.g. left) rotate and or drive in forward motion while wheels 120 and 122 (e.g., right) rotate and or drive in reverse motion or vice versa, skid steering where one side (e.g. left) of wheels 120 and 122 are precluded from moving and the other side (e.g., right) wheels 120 and 122 are under power of movement, as well as forward and reverse movement of wheels 120 and 122 and turn steer capabilities where as wheels 120 and 122 (e.g., left) rotate or drive forward at full power and wheels 120 and 122 (e.g., right) rotate or drive at a reduced power or vice versa which creates a slow, smooth gradual turning like that of an automobile. Preferably, a joy stick 164 can	

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	be operably connected to the control processor 160 and be equipped with contact switches such that actuation of the joy stick in a predetermined quadrant direction or part thereof will initiate one of the aforementioned operations of the control processor. For example, the forward movement of the stick 164 moves the vehicle 100 forward, backward movement moves vehicle 100 back, left or right movement produces a turn steer and or skid steer of one or the other side wheels 120 or 122 to effect a turn based on the position of the joy stick at the moment (e.g. from the point of neutral, half way through the axis of side travel of the joystick the vehicle will be in turn steer mode. As the operator or driver passes the half way axis point the vehicle 100 transitions into the skid steer mode then onto the counter-rotation mode), a diagonal movement produces a turn steer mode of the wheels disposed on opposite sides of the vehicle 100. The vehicle 100 includes more than four wheels, such as six and preferably eight wheels but could be of even a greater number of wheels which are connected to the vehicle and powered by independent hydraulic and or other propel means wheel motors. **[0054]** It is contemplated that a direct drive system can be employed wherein one or more wheels is driven by a drive shaft with suitable yoke connections, a hydrostatic drive transmission or via a hydraulic system as is known in the art. One or more drive systems can be employed on the vehicle 100 providing the user with multiple drive mechanism options.	
a fluid pump for pumping liquid manure;	**[0050]** The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse	**[0001]** The present invention relates in general to a manure agitator and, more particular, a to a floating manure agitator for use in association with a manure lagoon. **[0006]** It is also known in the art to provide a large vehicle that may be lowered into the lagoon. The vehicle may

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	equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided. **[0051]** The firefighting equipment 200 preferably includes cross over capabilities to perform hazardous material decon-tamination operations by merely the flip of an electronic switch and or a manual over-ride to the valve flow system. The fighting equipment 200 can be equipped with quick release pump systems that can provide various pressure and volume outputs to flow sufficient volumes of water and or foam and or dry chemicals in a fire and or hazardous materials decontami-nation mission from a distance that can not endanger the operator of the vehicle 100 and enable one to quickly change from one flow rate and pressure to another as the mission dictates such as from fire to hazmat to weapons to DEW (Directed Energy Weapons) to crowd control in seconds. The fighting equipment 200 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High Pressure/Low Volume, to Low Pressure/ High Volume, to Low Pressure/Low Volume, to High Pres-sure/High Volume in "joint" work together or independent pump systems and all pump systems can be draft capable, such as gross decontamination of men and equipment to include vehicles, downed aircraft, buildings, civilians, ect; in remote areas of the world during or after a chemical agent and or gas agent (Dirty Bomb), release by an opposing enemy or terrorist cell. Hose and attachment therewith can preferably be equipped to have quick release couplings. The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electrically started and all engine	equipped with a fluid intake, a pump and a fluid output to draw supernatant into the pump and force the supernatant at high speed downward toward the sludge. The vehicle is typically moved with cables by operators on the shore. **[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). **Figure 6:**

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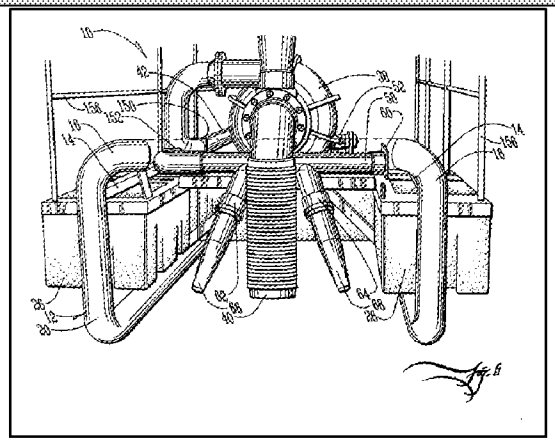
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	horse powers can be predetermined to be capable to give the necessary power to drive the intended function(s) of the engine. **[0052]** The tank 201 can be used for fire-fighting and includes a sloshless baffle system. The baffle system includes a plurality of panels disposed transversely to one another using both horizontal and vertical plates of various thick-nesses depending on the size of the tank (for structural sta-bility) utilizing varying sized holes in each panel (e.g., hole sizes of less than about an inch can be used). The baffle system provides for relatively constant fluid level within the tank 201. The baffle system prevents uncontrolled upward, downward and side to side fluid movement in rough terrains, sudden stops and starts, and most importantly sudden or quick turns that suddenly transfers the fluids weight energy dangerously in different directions. This also provides the vehicle 100 better stabilization and control characteristics at higher speeds during tight or sharp maneuvering as well as on rough, steep or unleveled terrains. The tank 201 is equipped with pump 202 for providing various pressure and volume outputs to shoot sufficient volumes of water and/or foam and or/dry chemicals toward a fire from a distance that can not endanger the operator of vehicle 100. The user/operator can thereby quickly switch from one flow rate and/or pressure to another as needed. Hoses can preferably be provided with tank 201 and are of a quick connect end couplings as is known in the art. **[0059]** This combination also has several important advan-tages, such as the 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. For example, the pump can force the water, foam and dry chemi-cal and decon solutions through the hose at a higher velocity, thus allowing the	

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	firefighters to attack the fire or decon objec-tive from a greater distance than if they were on foot. Further-more, while it is not practical for a firefighter or group of firefighters to carry a water cannon and then hold and operate it by hand, the present invention does permit the transporta-tion of the water cannon, thus enabling the firefighters to attack the fire or decon objective from an even greater dis-tance. The water cannon is as well capable to shoot streams of water (straight streams, fog, wide streams) of just water, foam, dry chemical or decon solutions in any combination and can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes as well the water cannon can be operated manually in the case of a system failure. **[0061]** The use of a pump mounted to the all terrain vehicle which is capable of pumping water from a lake or stream onto a fire is another feature of the present invention. This feature reduces the need to transport water to the site of the fire or, in the alternative, makes it easier to transport water pumping equipment to the body of water to be used infighting the fire. **[0063]** The tank 201 can preferably have a recessed top for storage of hoses, multiple 100-foot hoses, and a large fill orifice, a screen to filter debris that would otherwise clog hoses, pump 202 to refill the tank 201 from lakes, ponds, or streams. Additionally, the tank 201 includes a master drain for flushing and cleaning the tank. In addition, a water cannon may be provided with vehicle 100 and located adjacent the operator to enable use thereof.	
A power source connected to a hydraulic pump, the power source	**[0024]** Accordingly, the present invention is an improve-ment on the prior invention and is directed to an all-terrain vehicle. One embodiment of the vehicle includes a first chas-sis and second chassis hingedly connected to the first chassis, each of the first	**[0024]** The vessel (12) is provided with a deck (34) and a power source (36). (FIG.1). While the power source (36) may be any suitable power source, in the preferred embodiment the power source (36) is a John Deere Tier 3

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configured to provide power to both the ground engaging propulsion structure and the fluid pump; and,	and second chassis including a plurality of wheels which are operably connected to a hydraulic motor (or other propelling means, such as electric wheel). In this regard, the connection can be made for up and down movement (vertical) (oscillation) for unlevel terrain movement compen-sation and or cross hingedly connected for both up and down movement (vertical) (oscillation) as well as side to side move-ment (horizontal)(oscillation) for unlevel terrain movement compensation. The hydraulic motor is operably connected to an engine which is operably connected to the first chassis and can also be connected to the second chassis. **[0025]** A transmission pump operably interconnects the hydraulic motors and engine via hydraulic lines and prefer-ably connects to a flow divider and or a combination of flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. There can be a plu-rality of flow dividers and or flow divider manifolds to regu-late and distribute flow in the hydraulic lines to each wheel motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid compo-nents. These valves could either manually or automatically be sensing pressure changes and isolate a damaged wheel motor from the rest of the hydraulic system preventing loss of power and hydraulic fluid from the rest of the hydraulic system. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically as well as manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Thus, if there is a leak in one wheel motor or other hydraulic component, this can be stopped and hydraulic fluid redirected to the remaining wheel motors and other hydraulic components thereby providing drive and PTO (Power Take Off) for the remaining wheel motors and other	diesel engine. Depending on the desired size and efficiency of the agitator (10), the power source (36) is preferably between twenty and two-thousand horsepower, more preferably between fifty and five hundred horsepower, and most preferably between one hundred fifty and two hundred fifty horsepower. **[0025]** Coupled to the power source (36) is a liquid manure pump such as a slurry pump (38). In the preferred embodi-ment, the slurry pump (38) is a Cornell Redi-Prime centrifu-gal 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.

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	hydraulic components. The vehicle thus enables a series of backup drive mechanisms. A central con-trol processor can be provided on the vehicle and is operably connected to the sensors and Isolation and speed shift valves and power system, such as that provided by the engine or separate battery, to control operation of each of the aforemen-tioned movable components. Importantly, this provides for counter rotation of wheels where one side of wheels turn in a forward motion while at the exact same time the other side of wheels tum in a reverse motion and vice versa depending on which direction the operator decides to execute the counter rotation e.g. (left or right, in forward or reverse), skid steering where one side of wheels are precluded from moving and the other side wheels are under power of movement tum steer like an automobile where one side receives less power than the other at the wheel motors thereby creating a smooth left or right turn, as well as forward and reverse movement of wheels. Preferably, a joy stick can be operably connected to the control processor and be equipped with contact switches such that actuation of the joy stick in a predetermined quad-rant direction or part thereof will initiate one of the aforementioned operations of the control processor thereof will initiate one of the aforementioned operations of the control processor. **[0039]** Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCR5-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected	

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	to an engine 130 which can preferably be operably connected to the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine. **[0040]** Transmission and or tandem combination hydraulic pumps 132 and 134 can operably interconnect to the hydrau-lic (and or other propel means) wheel motors 124 and 126 and engine 130 via hydraulic lines 136A and 136B and 138A and 138B, wherein lines 136A and 138A can preferably connect to flow divider 140 and 142 (and or combination of flow divider manifolds) to regulate hydraulic flow to the wheel motors 124 and 126 and lines 136B and 138B are return lines to the respective pumps 132 and 134. **[0051]** The firefighting equipment 200 preferably includes cross over capabilities to perform hazardous material decon-tamination operations by merely the flip of an electronic switch and or a manual over-ride to the valve flow system. The fighting equipment 200 can be equipped with quick release pump systems that can provide various pressure and volume outputs to flow sufficient volumes of water and or foam and or dry chemicals in a fire and or hazardous materials decontami-nation mission from a distance that can not endanger the operator of the vehicle 100 and enable one to quickly change from one flow rate and pressure to another as the mission dictates such as from fire to hazmat to weapons to DEW (Directed Energy Weapons) to crowd control in seconds. The fighting equipment 200 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High Pressure/Low Volume, to Low Pressure/ High Volume, to Low Pressure/Low Volume, to High	

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	Pres-sure/High Volume in "joint" work together or independent pump systems and all pump systems can be draft capable, such as gross decontamination of men and equipment to include vehicles, downed aircraft, buildings, civilians, ect; in remote areas of the world during or after a chemical agent and or gas agent (Dirty Bomb), release by an opposing enemy or terrorist cell. Hose and attachment therewith can preferably be equipped to have quick release couplings. The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electrically started and all engine horse powers can be predetermined to be capable to give the necessary power to drive the intended function(s) of the engine.	
A wireless remote control configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure; (2) control a flow of liquid manure from the liquid pump; (3) control at least one of the speed and direction of the vehicle when the	**[0018]** Another objective is to develop a small manned or unmanned or manned to unmanned by the methods of using various broadcast signals such as satellite, broadband, high band, Ethernet, Bluetooth and algorithms for robotic ground vehicle's. **[0021]** Another objective is to develop a small manned or unmanned robotic ground vehicle. **[0059]** This combination also has several important advan-tages, such as the 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. For example, the pump can force the water, foam and dry chemi-cal and decon solutions through the hose at a higher velocity, thus allowing the firefighters to attack the fire or decon objec-tive from a greater distance than if they were on foot. Further-more, while it is not practical for a firefighter or group of firefighters to carry a water cannon and then hold and operate it by hand, the present invention	**[0009]** It would further be desirable to provide a floating vehicle for the mixing of sludge solids into suspension with the supernatant that may be quickly and readily transported to a manure lagoon, launched into the lagoon, used to suspend sludge solids into suspension with the supernatant, and removed from the lagoon onto a trailer. It would also be desirable to provide a floating vehicle configured to the stan-dard, height, weight and width restrictions associated with highway travel. Additionally, it would be desirable to provide a floating manure agitation vehicle that may be remotely controlled and guided to specific portions of the lagoon to move solids of the sludge into suspension with the superna-tant as desired. **[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also

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vehicle is ground engaging; and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating.	does permit the transporta-tion of the water cannon, thus enabling the firefighters to attack the fire or decon objective from an even greater dis-tance. The water cannon is as well capable to shoot streams of water (straight streams, fog, wide streams) of just water, foam, dry chemical or decon solutions in any combination and can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes as well the water cannon can be operated manually in the case of a system failure. [0064] Manual controls provide for operation of the vehicle 100. However, the operations of each unit described herein can be performed by remote control as part of processor 160 which is operably quick connectable to the vehicle 100 hav-ing suitable connections therewith for each aforesaid compo-nent as well as transceiver equipment associated therewith enabling the processor 160 to be reprogrammed on a need to need basis. This enables the vehicle 100 to be remotely con-trolled via line of sight, gps, or by air via aircraft such as the so-called "Preditor." Remote control mechanics, servos, hardware, wiring harnesses can be quick releasable to facili-tate easy replacement of any faulty components in case of damage or failure. A manual over-ride can be incorporated should the vehicle 100 need to be taken out of autonomous, unmanned mode for whatever reason and vice versa. [0065] For example, in an instance where as the operator could become incapacitated on a mission, the vehicle 100 via radio, satellite, cell, Modbus, serial communications, remote serial communication ports, digital or IR (infrared) signals can be placed into remote control operation to continue the mission as well as performance and other informational data can be transmitted and received by a second or more party remote from	coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. [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). [0035] Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw

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	the vehicle 100. This can be accomplished through methods such as using the SAE (Society of Automotive Engineer's), J-1939 standard reader's protocol using the engine and transmission ECM (Engine Control Module) and ECU (Engine Control Unit) and transmission data reader's through the use of pressure regulators linked with On Board Diagnostics (OBD-2) 16 or more pin connector linked to various communication signals such as "Blue Tooth", communication transmissions to send all relevant and pertinent engine, transmission, weapons system data to and from the aircraft allowing the aircraft and the vehicle 100 to communicate with each other through vehicle 100's on-board computer software to convert any incoming wide spectrum of broadband signals, radio frequencies (UHF, VHF, Low Band, High Band, etc.) cell, satellite, digital or IR (Infra Red) signals into electrical impulses to engage servo's attached to vehicle 100 steering, braking, engine, transmission, weapons deployment and engagement systems, etc., allowing the aircraft to be the forward observers eye's (FO), for guidance to the vehicle 100. For instance, the aircraft informing the vehicle 100 that it's approaching a ravine and informing the vehicle 100 that it needs to down shift the transmission into a lower gear ratio for more power to negotiate itself at a slower speed to drive into the ravine and having the power to climb back out of the ravine. All pertinent data transmissions can be sent back and forth allowing for all systems monitoring such as vehicle speed, rpm, water temperature, oil pressure, gear transmission, electrical input and output, weapons diagnostics to include arming and disarming as well as including weapons selection if equipped with multiple weapons systems, water tank level, foam tank level, pump water pressure etc.	supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (7 4) to direct the hydrau-lic cylinder (52) to angle the first slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon. **[0037]** The remote control system (84) may be used to cause the slurry pump (38) to expel slurry (50) more slowly from the slurry outputs (44), (62) and (64) as the agitator (10) is near the shore (142) of the lagoon (22) so as not to penetrate the lining (144) of the lagoon (22) thereby allowing the slurry (50) to escape. As the agitator (10) moves towards the center of the lagoon (22) which may range from five to forty feet deep, or more, the remote control system (84) can be used to increase the speed at which the supernatant (128) is passed from the slurry outputs (44), (62) and (64) to adequately mix the sludge (130) at the deepest portions of the lagoon (22). The remote control system (84) is used to direct the agitator (10) to all desired portions of the lagoon until the crust (126) and supernatant (128) is adequately mixed with the sludge (130).

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
2. The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump.	**[0050]** The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided. **[0051]** The firefighting equipment 200 preferably includes cross over capabilities to perform hazardous material decon-tamination operations by merely the flip of an electronic switch and or a manual over-ride to the valve flow system. The fighting equipment 200 can be equipped with quick release pump systems that can provide various pressure and volume outputs to flow sufficient volumes of water and or foam and or dry chemicals in a fire and or hazardous materials decontami-nation mission from a distance that can not endanger the operator of the vehicle 100 and enable one to quickly change from one flow rate and pressure to another as the mission dictates such as from fire to hazmat to weapons to DEW (Directed Energy Weapons) to crowd control in seconds. The fighting equipment 200 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High Pressure/Low Volume, to Low Pressure/ High Volume, to Low Pressure/Low Volume, to High Pres-sure/High Volume in "joint" work together or independent pump systems and all pump systems can be draft capable, such as gross decontamination of men and equipment to include vehicles, downed aircraft, buildings, civilians, ect; in remote areas of the world during or after a chemical agent and or gas agent (Dirty Bomb), release by an opposing enemy or terrorist cell. Hose and	**[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. **[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

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	attachment therewith can preferably be equipped to have quick release couplings. The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electrically started and all engine horse powers can be predetermined to be capable to give the necessary power to drive the intended function(s) of the engine. **[0052]** The tank 201 can be used for fire-fighting and includes a sloshless baffle system. The baffle system includes a plurality of panels disposed transversely to one another using both horizontal and vertical plates of various thick-nesses depending on the size of the tank (for structural sta-bility) utilizing varying sized holes in each panel (e.g., hole sizes of less than about an inch can be used). The baffle system provides for relatively constant fluid level within the tank 201. The baffle system prevents uncontrolled upward, downward and side to side fluid movement in rough terrains, sudden stops and starts, and most importantly sudden or quick turns that suddenly transfers the fluids weight energy dangerously in different directions. This also provides the vehicle 100 better stabilization and control characteristics at higher speeds during tight or sharp maneuvering as well as on rough, steep or unleveled terrains. The tank 201 is equipped with pump 202 for providing various pressure and volume outputs to shoot sufficient volumes of water and/or foam and or/dry chemicals toward a fire from a distance that can not endanger the operator of vehicle 100. The user/operator can thereby quickly switch from one flow rate and/or pressure to another as needed. Hoses can preferably be provided with tank 201 and are of a quick connect end couplings as is known in the art.	hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56). (FIGS. 1 and 5). **[0035]** Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (7 4) to direct the hydrau-lic cylinder (52) to angle the first slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon.

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0059] This combination also has several important advantages, such as the 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. For example, the pump can force the water, foam and dry chemical and decon solutions through the hose at a higher velocity, thus allowing the firefighters to attack the fire or decon objective from a greater distance than if they were on foot. Further-more, while it is not practical for a firefighter or group of firefighters to carry a water cannon and then hold and operate it by hand, the present invention does permit the transporta-tion of the water cannon, thus enabling the firefighters to attack the fire or decon objective from an even greater distance. The water cannon is as well capable to shoot streams of water (straight streams, fog, wide streams) of just water, foam, dry chemical or decon solutions in any combination and can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes as well the water cannon can be operated manually in the case of a system failure.	
3. The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof.	[0050] The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided. [0052] The tank 201 can be used for fire-fighting and includes a sloshless baffle system. The baffle system includes a plurality of panels disposed transversely to one another using both horizontal	[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

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	and vertical plates of various thick-nesses depending on the size of the tank (for structural sta-bility) utilizing varying sized holes in each panel (e.g., hole sizes of less than about an inch can be used). The baffle system provides for relatively constant fluid level within the tank 201. The baffle system prevents uncontrolled upward, downward and side to side fluid movement in rough terrains, sudden stops and starts, and most importantly sudden or quick turns that suddenly transfers the fluids weight energy dangerously in different directions. This also provides the vehicle 100 better stabilization and control characteristics at higher speeds during tight or sharp maneuvering as well as on rough, steep or unleveled terrains. The tank 201 is equipped with pump 202 for providing various pressure and volume outputs to shoot sufficient volumes of water and/or foam and or/dry chemicals toward a fire from a distance that can not endanger the operator of vehicle 100. The user/operator can thereby quickly switch from one flow rate and/or pressure to another as needed. Hoses can preferably be provided with tank 201 and are of a quick connect end couplings as is known in the art.	hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56). (FIGS. 1 and 5).
4. The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening.	**[0051]** The firefighting equipment 200 preferably includes cross over capabilities to perform hazardous material decon-tamination operations by merely the flip of an electronic switch and or a manual over-ride to the valve flow system. The fighting equipment 200 can be equipped with quick release pump systems that can provide various pressure and volume outputs to flow sufficient volumes of water and or foam and or dry chemicals in a fire and or hazardous materials decontami-nation mission from a distance that can not endanger the operator of the vehicle 100 and enable one to quickly change from one flow rate and pressure to another as the mission dictates such as from fire to hazmat to weapons to DEW (Directed Energy Weapons) to crowd control	**[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

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	in seconds. The fighting equipment 200 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High Pressure/Low Volume, to Low Pressure/ High Volume, to Low Pressure/Low Volume, to High Pres-sure/High Volume in "joint" work together or independent pump systems and all pump systems can be draft capable, such as gross decontamination of men and equipment to include vehicles, downed aircraft, buildings, civilians, ect; in remote areas of the world during or after a chemical agent and or gas agent (Dirty Bomb), release by an opposing enemy or terrorist cell. Hose and attachment therewith can preferably be equipped to have quick release couplings. The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electrically started and all engine horse powers can be predetermined to be capable to give the necessary power to drive the intended function(s) of the engine **[0059]** This combination also has several important advan-tages, such as the 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. For example, the pump can force the water, foam and dry chemi-cal and decon solutions through the hose at a higher velocity, thus allowing the firefighters to attack the fire or decon objec-tive from a greater distance than if they were on foot. Further-more, while it is not practical for a firefighter or group of firefighters to carry a water cannon and then hold and operate it by hand, the present invention does permit the transporta-tion of the water cannon, thus enabling the firefighters to attack the fire or decon objective from an even greater dis-tance. The water cannon is as well capable to shoot	hydraulic pump (54) that, in turn, is coupled to a 12-volt battery (56). (FIGS. 1 and 5). **[0033]** If desired, the remote control system (84) may be provided with a first gate close button (114) that closes a valve (115) on the transport pipe (42) positioned between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are pro-vided to open and close a valve (152) provided between the fluid intake pipe (40) and the nozzles (66) and (68). The gate buttons (114), (116), (118) and (120) allow a user to selec-tively supply fluid through one, two or three of the nozzles (48), (66) and (68) as is desired to appropriately agitate the fluid (128) within which the agitator (10) is floating. The remote control system (84) is also provided with a button (122) to actuate lights (154) provided on the agitator (10) if it is desired to use the agitator (10) in circumstances where additional lighting is desired. The remote control system (84) may be configured to receive feedback from the control panel (74), such as system status, latitude, longitude and height coordinates. **[0035]** Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (7 4) to direct the hydrau-lic cylinder (52) to angle the first

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	streams of water (straight streams, fog, wide streams) of just water, foam, dry chemical or decon solutions in any combination and can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes as well the water cannon can be operated manually in the case of a system failure.	slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon. **[0037]** The remote control system (84) may be used to cause the slurry pump (38) to expel slurry (50) more slowly from the slurry outputs (44), (62) and (64) as the agitator (10) is near the shore (142) of the lagoon (22) so as not to penetrate the lining (144) of the lagoon (22) thereby allowing the slurry (50) to escape. As the agitator (10) moves towards the center of the lagoon (22) which may range from five to forty feet deep, or more, the remote control system (84) can be used to increase the speed at which the supernatant (128) is passed from the slurry outputs (44), (62) and (64) to adequately mix the sludge (130) at the deepest portions of the lagoon (22). The remote control system (84) is used to direct the agitator (10) to all desired portions of the lagoon until the crust (126) and supernatant (128) is adequately mixed with the sludge (130). **Figure 7:**

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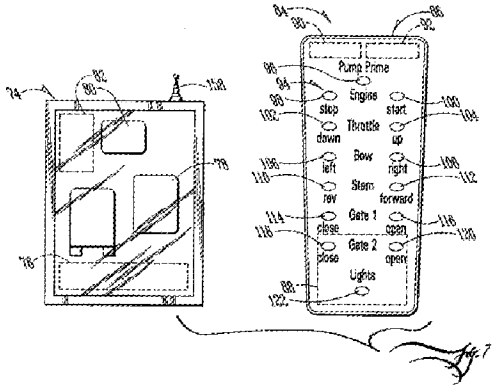
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		
5. The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit.	**[0050]** The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided.	**[0008]** It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant, while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air. **[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

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		(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). **[0029]** Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to direct the slurry (50) as desired and to increase the velocity with which the slurry (50) exits the nozzles (66) and (68). The second slurry output (62) is preferably directed between five and eighty degrees port, more preferably directed between ten and sixty degrees port and, most preferably, between fifteen and forty-five degrees port. The third slurry output (64) is preferably directed between five and eighty degrees star-board, more preferably between ten and sixty degrees star-board and, most preferably, between fifteen and forty-five degrees starboard. The intake pipe (40) is preferably posi-tioned between the first slurry output (44) and the second slurry output (62). **[0033]** If desired, the remote control system (84) may be provided with a first gate close button (114) that closes a valve (115) on the transport pipe (42) positioned between the fluid intake pipe (40) and forward nozzle (48). A gate open

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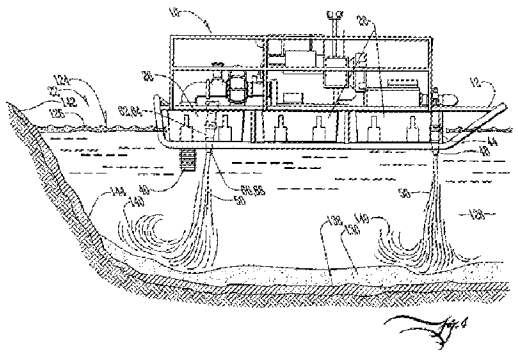
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are pro-vided to open and close a valve (152) provided between the fluid intake pipe (40) and the nozzles (66) and (68). The gate buttons (114), (116), (118) and (120) allow a user to selec-tively supply fluid through one, two or three of the nozzles (48), (66) and (68) as is desired to appropriately agitate the fluid (128) within which the agitator (10) is floating. The remote control system (84) is also provided with a button(122) to actuate lights (154) provided on the agitator (10) if it is desired to use the agitator (10) in circumstances where additional lighting is desired. The remote control system (84) may be configured to receive feedback from the control panel (74), such as system status, latitude, longitude and height coordinates. **Figure 4:**  **Figure 5:**

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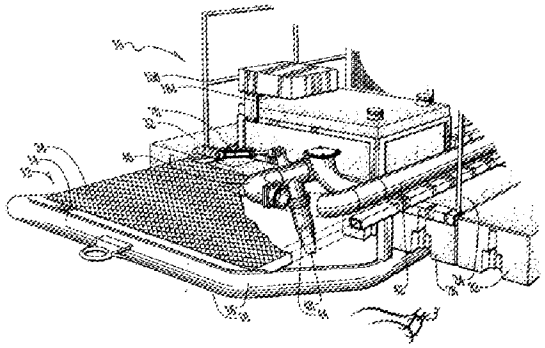
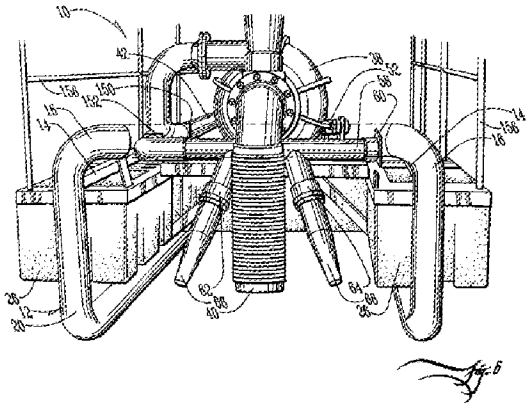
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		 **Figure 6:** 
6. The vehicle of claim 2, wherein the vehicle further	**[0050]** The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are	**[0008]** It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
comprises a nozzle at the end of the conduit.	operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided.	multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant, while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air. **[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). **[0029]** Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to direct the slurry (50) as desired and to increase the velocity with which the slurry (50) exits the nozzles (66)

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		and (68). The second slurry output (62) is preferably directed between five and eighty degrees port, more preferably directed between ten and sixty degrees port and, most preferably, between fifteen and forty-five degrees port. The third slurry output (64) is preferably directed between five and eighty degrees star-board, more preferably between ten and sixty degrees star-board and, most preferably, between fifteen and forty-five degrees starboard. The intake pipe (40) is preferably posi-tioned between the first slurry output (44) and the second slurry output (62). **[0033]** If desired, the remote control system (84) may be provided with a first gate close button (114) that closes a valve (115) on the transport pipe (42) positioned between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are pro-vided to open and close a valve (152) provided between the fluid intake pipe (40) and the nozzles (66) and (68). The gate buttons (114), (116), (118) and (120) allow a user to selec-tively supply fluid through one, two or three of the nozzles (48), (66) and (68) as is desired to appropriately agitate the fluid (128) within which the agitator (10) is floating. The remote control system (84) is also provided with a button(122) to actuate lights (154) provided on the agitator (10) if it is desired to use the agitator (10) in circumstances where additional lighting is desired. The remote control system (84) may be configured to receive feedback from the control panel (74), such as system status, latitude, longitude and height coordinates. **Figure 4:**

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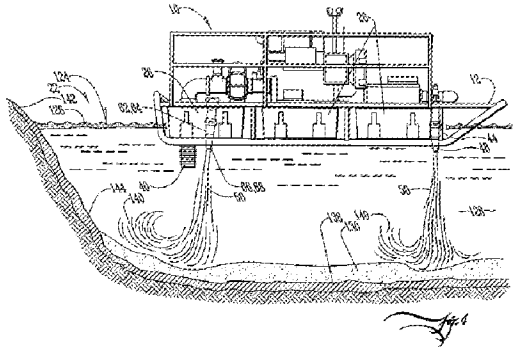
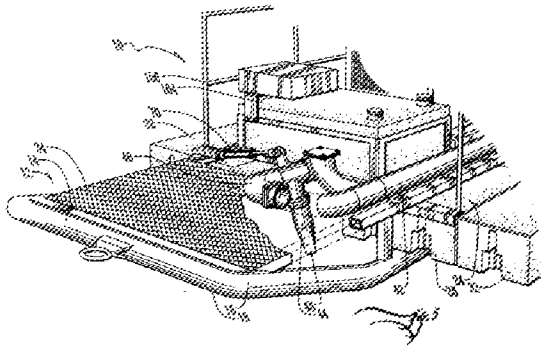
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		 **Figure 5:**  **Figure 6:**

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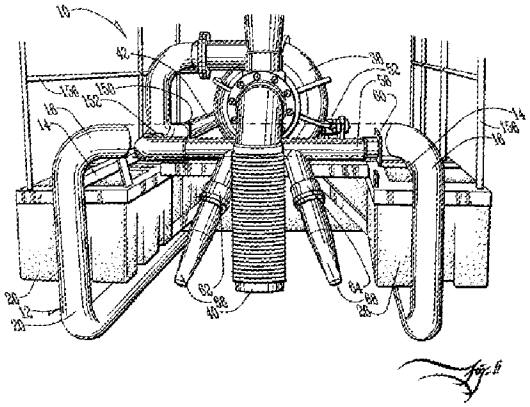
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		
7. The vehicle of claim 1, wherein the at least one of speed and direction of the vehicle when the vehicle is floating is 65 controlled by a fluid mover.	**[0049]** A protective cage 103 can be provided on the chassis 102 for the occupant and or occupants. Communications, special operations, laser, search, rescue, medical, surveillance, cargo, transport, construction, fuel tank, vehicle engine, transmission, propulsion pumps, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment can preferably be operatively connected to the chassis 102 and or chassis 104. **[0058]** The vehicle 100 is designed to be drivable on uneven ground, on mud, through deep water, or on other surfaces a regular automobile or truck cannot be driven on. To achieve this effect, the vehicle can be relatively lightweight, having eight, ten or twelve-wheel drive or more, which can prefer-ably be sealed against water intrusion to critical engine and transmission parts. Weight reduction can be achieved by using various polymers which also have ballistic proof capa-bility.	**Abstract:** A floating manure agitator that floats on the surface of a manure lagoon and that may be remotely controlled to agitate manure supernatant into a slurry with sludge settling on the bottom of the lagoon. The agitator is provided with a plurality of fluid outputs, the direction of which may be controlled to motivate and steer the agitator. The outputs are angled to develop vortices of supernatant into the sludge to further mix the materials into a slurry **[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0059] This combination also has several important advan-tages, such as the 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. For example, the pump can force the water, foam and dry chemi-cal and decon solutions through the hose at a higher velocity, thus allowing the firefighters to attack the fire or decon objec-tive from a greater distance than if they were on foot. Further-more, while it is not practical for a firefighter or group of firefighters to carry a water cannon and then hold and operate it by hand, the present invention does permit the transporta-tion of the water cannon, thus enabling the firefighters to attack the fire or decon objective from an even greater dis-tance. The water cannon is as well capable to shoot streams of water (straight streams, fog, wide streams) of just water, foam, dry chemical or decon solutions in any combination and can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes as well the water cannon can be operated manually in the case of a system failure. [0064] Manual controls provide for operation of the vehicle 100. However, the operations of each unit described herein can be performed by remote control as part of processor 160 which is operably quick connectable to the vehicle 100 hav-ing suitable connections therewith for each aforesaid compo-nent as well as transceiver equipment associated therewith enabling the processor 160 to be reprogrammed on a need to need basis. This enables the vehicle 100 to be remotely con-trolled via line of sight, gps, or by air via aircraft such as the so-called "Preditor." Remote control mechanics, servos, hardware, wiring harnesses can be quick releasable to facili-tate easy replacement of any faulty components in case of damage or failure. A manual over-	floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. [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). [0029] Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to direct the slurry (50) as desired and to increase the velocity with which the slurry (50) exits the nozzles (66) and (68). The second slurry output (62) is preferably directed

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	ride can be incorporated should the vehicle 100 need to be taken out of autonomous, unmanned mode for whatever reason and vice versa. **[0079]** The hull (bottom section) of the vehicle 100 can preferably be shaped in such a configuration as that of a boat in a slight curved V shape with angles from 1 degree to 95 degrees and may be greater that accomplish two separate tasks. (Task!) The hull of vehicle 100 can facilitate amphibious operations that accomplish three different sub tasks being (1) eliminating water drag on the vehicle as it moves through the water, (2) water build up distribution in front of and to the sides of the vehicle 100 (which slows the movement and turning capabilities of the vehicle 100), (3) significantly enhances both the movement directional speed i.e. forward or reverse and significantly enhances the turning capabilities left or right as well of vehicle 100. (Task 2) Upper body 105 and lower body 107 of vehicle 100 can facilitate land and sea borne operations in relationship to ballistic resistant proper-ties and Explosive Energy Dispersion, (EED), in relationship to IED's (Improvised Explosive Devices) and other explosive devices i.e. (land mines and or water mines), that accomplish two sub tasks. (Sub-Task 1) The hull uses angles of 1 degree to 95 degrees or greater significantly enhance ballistic pro-jectile defeat by creating a ricochet effect thereby increasing the effectiveness of the used method of armor. Using varying degrees of angles in different configurations using different thicknesses within the armors configuration can create a pocket and or channel the trajectory path of the munition into this pocket to catch or trap the munition or channel and deflect the munition into a different trajectory away from a crucial portion of the vehicle 100. (Sub-Task 2) The hull can use the same 1 degree to 95 degree angles or greater incorporated into configuration	between five and eighty degrees port, more preferably directed between ten and sixty degrees port and, most preferably, between fifteen and forty-five degrees port. The third slurry output (64) is preferably directed between five and eighty degrees star-board, more preferably between ten and sixty degrees star-board and, most preferably, between fifteen and forty-five degrees starboard. The intake pipe (40) is preferably posi-tioned between the first slurry output (44) and the second slurry output (62). **[0032]** The remote control system (64) also includes an engine stop button (98), start button (100), a throttle down button (102) and throttle up button (104). To steer the agitator (10) the remote control system (84) is provided with a bow left button (106) and bow right button (108). The bow left button (106) causes the steering control hydraulic cylinder (52) to extend, thereby directing the nozzle (48) to starboard and driving the agitator (10) port. The remote control system (84) is also provided with a bow right button (108) to retract the hydraulic cylinder (52) and steer the agitator (10) star-board. The remote control system (84) is provided with a reverse button (110) which causes the hydraulic cylinder (70) to extend, thereby forcing the pivot pipe (58) to direct the slurry outputs (62) and (64) toward the bow (18) of the agi-tator (10), thereby driving the vessel (12) rearward. Similarly, a forward button (112) causes the hydraulic cylinder (70) to retract and drive the agitator (10) forward. **[0035]** Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	geometry into both the upper and lower body of vehicle 100 which accomplishes explosive blast energy dis-persion away from the vehicle 100. The lower body of vehicle 100 would also incorporate blast ducts using 1 degree to 95 degree angles in a shape configuration of duct channels formed within or incorporated onto the lower body of vehicle 100 that would give the energy and or pressure release of the blast a directional path to follow leading away from the vehicle 100 and critical components of the underbody and side components of the vehicle 100 such as wheel mounting hubs, tires and other critical components.	supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (74) to direct the hydrau-lic cylinder (52) to angle the first slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon.
8. The vehicle of claim **1,** further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.		**[0008]** It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant, while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air. **[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

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		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). **[0029]** Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to direct the slurry (50) as desired and to increase the velocity with which the slurry (50) exits the nozzles (66) and (68). The second slurry output (62) is preferably directed between five and eighty degrees port, more preferably directed between ten and sixty degrees port and, most preferably, between fifteen and forty-five degrees port. The third slurry output (64) is preferably directed between five and eighty degrees star-board, more preferably between ten and sixty degrees star-board and, most preferably, between fifteen and forty-five degrees starboard. The intake pipe (40) is preferably posi-tioned between the first slurry output (44) and the second slurry output (62). **Figure 4:**

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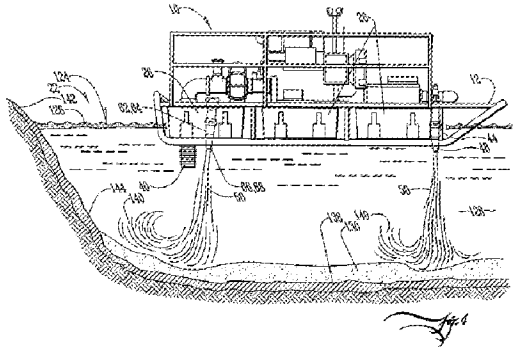
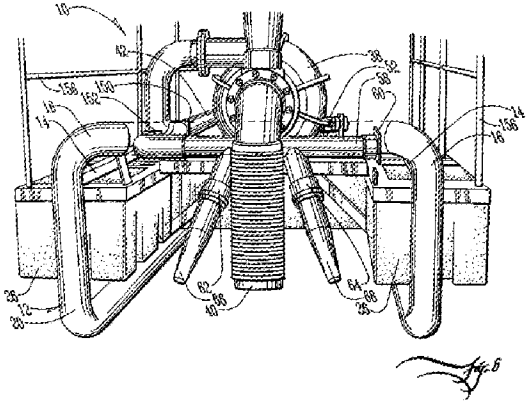
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		 **Figure 6:** 
9. The vehicle of claim 8, wherein		**Abstract:** A floating manure agitator that floats on the surface of a manure lagoon and that may be remotely

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.		controlled to agitate manure supernatant into a slurry with sludge settling on the bottom of the lagoon. The agitator is provided with a plurality of fluid outputs, the direction of which may be controlled to motivate and steer the agitator. The outputs are angled to develop vortices of supernatant into the sludge to further mix the materials into a slurry. **[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. **[0032]** The remote control system (64) also includes an engine stop button (98), start button (100), a throttle down button (102) and throttle up button (104). To steer the agitator (10) the remote control system (84) is provided with a bow left button (106) and bow right button (108). The bow left button (106) causes the steering control hydraulic cylinder (52) to extend, thereby directing the nozzle (48) to

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		starboard and driving the agitator (10) port. The remote control system (84) is also provided with a bow right button (108) to retract the hydraulic cylinder (52) and steer the agitator (10) star-board. The remote control system (84) is provided with a reverse button (110) which causes the hydraulic cylinder (70) to extend, thereby forcing the pivot pipe (58) to direct the slurry outputs (62) and (64) toward the bow (18) of the agi-tator (10), thereby driving the vessel (12) rearward. Similarly, a forward button (112) causes the hydraulic cylinder (70) to retract and drive the agitator (10) forward. **[0033]** If desired, the remote control system (84) may be provided with a first gate close button (114) that closes a valve (115) on the transport pipe (42) positioned between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are provided to open and close a valve (152) provided between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are provided to open and close a valve (152) provided between the fluid intake pipe (40) and the nozzles (66) and (68). The gate buttons (114), (116), (118), and (120) allow a user to selectively supply fluid through one, two or three of the nozzles (48), (66) and (68) as is desired to appropriately agitate the fluid (128) within which the agitator (10) is floating. The remote control system (84) is also provided with a button (122) to actuate lights (154) provided on the agitator (10) if it is desired to use the agitator (10) in circumstances where additional lighting is desired.

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		The remote control system (84) may be configured to receive feedback from the control panel (74), such as system status, latitude, longitude and height coordinates. **[0035]** Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (7 4) to direct the hydrau-lic cylinder (52) to angle the first slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon. **[0037]** The remote control system (84) may be used to cause the slurry pump (38) to expel slurry (50) more slowly from the slurry outputs (44), (62) and (64) as the agitator (10) is near the shore (142) of the lagoon (22) so as not to penetrate the lining (144) of the lagoon (22) thereby allowing the slurry (50) to escape. As the agitator (10) moves towards the center of the lagoon (22) which may range from five to forty feet deep, or more, the remote control system (84) can be used to increase the speed at which the supernatant (128) is passed from the slurry outputs (44), (62) and (64) to

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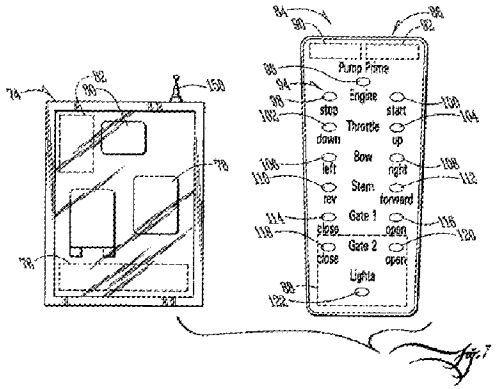
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		adequately mix the sludge (130) at the deepest portions of the lagoon (22). The remote control system (84) is used to direct the agitator (10) to all desired portions of the lagoon until the crust (126) and supernatant (128) is adequately mixed with the sludge (130). **Figure 7:** 
10. The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.		**[0008]** It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of the lagoon into suspension and create vortices within the lagoon to assist in carrying solids within the sludge into suspension in the supernatant. It would additionally be desirable to direct the nozzles to create vortices that mix the solids of the sludge into suspension with the supernatant,

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		while minimizing the amount of unpleasant smelling hydrogen sulfide rising to the surface and escaping into the air. **[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). **[0029]** Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to direct the slurry (50) as desired and to increase the velocity with which the slurry (50) exits the nozzles (66) and (68). The second slurry output (62) is preferably directed between five and eighty degrees port, more preferably directed between ten and sixty degrees port and, most preferably, between fifteen and forty-five degrees port. The third slurry output (64) is preferably directed between five and eighty degrees star-board, more preferably between ten and sixty degrees star-board and, most preferably, between

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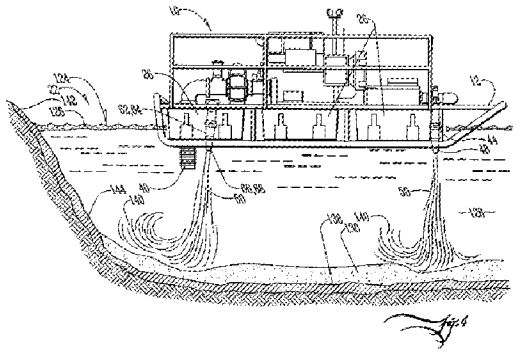
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		fifteen and forty-five degrees starboard. The intake pipe (40) is preferably posi-tioned between the first slurry output (44) and the second slurry output (62). **Figure 4:**  **Figure 6:**

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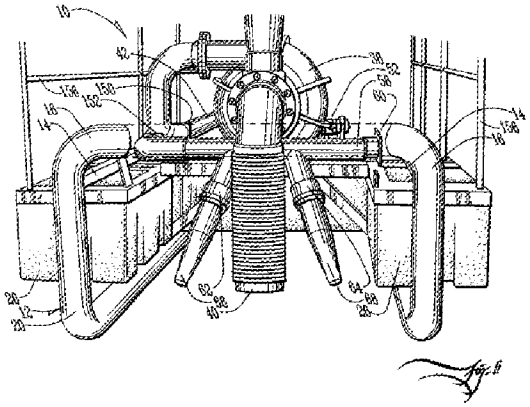
Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		
11. The vehicle of claim 10, wherein the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.		**Abstract:** A floating manure agitator that floats on the surface of a manure lagoon and that may be remotely controlled to agitate manure supernatant into a slurry with sludge settling on the bottom of the lagoon. The agitator is provided with a plurality of fluid outputs, the direction of which may be controlled to motivate and steer the agitator. The outputs are angled to develop vortices of supernatant into the sludge to further mix the materials into a slurry. **[0009]** It would further be desirable to provide a floating vehicle for the mixing of sludge solids into suspension with the supernatant that may be quickly and readily transported to a manure lagoon, launched into the lagoon, used to suspend sludge solids into suspension with the supernatant, and removed from the lagoon onto a trailer. It would also be desirable to provide a floating vehicle configured to the standard, height, weight and width restrictions associated

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		with highway travel. Additionally, it would be desirable to provide a floating manure agitation vehicle that may be remotely controlled and guided to specific portions of the lagoon to move solids of the sludge into suspension with the supernatant as desired. **[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. **[0032]** The remote control system (64) also includes an engine stop button (98), start button (100), a throttle down button (102) and throttle up button (104). To steer the agitator (10) the remote control system (84) is provided with a bow left button (106) and bow right button (108). The bow left button (106) causes the steering control hydraulic cylinder (52) to extend, thereby directing the nozzle (48) to starboard and driving the agitator (10) port. The remote

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		control system (84) is also provided with a bow right button (108) to retract the hydraulic cylinder (52) and steer the agitator (10) star-board. The remote control system (84) is provided with a reverse button (110) which causes the hydraulic cylinder (70) to extend, thereby forcing the pivot pipe (58) to direct the slurry outputs (62) and (64) toward the bow (18) of the agi-tator (10), thereby driving the vessel (12) rearward. Similarly, a forward button (112) causes the hydraulic cylinder (70) to retract and drive the agitator (10) forward. **[0033]** If desired, the remote control system (84) may be provided with a first gate close button (114) that closes a valve (115) on the transport pipe (42) positioned between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are provided to open and close a valve (152) provided between the fluid intake pipe (40) and forward nozzle (48). A gate open button (116) is also provided to open the valve (150). Similarly, a close gate button (118) and open gate button (120) are provided to open and close a valve (152) provided between the fluid intake pipe (40) and the nozzles (66) and (68). The gate buttons (114), (116), (118), and (120) allow a user to selectively supply fluid through one, two or three of the nozzles (48), (66) and (68) as is desired to appropriately agitate the fluid (128) within which the agitator (10) is floating. The remote control system (84) is also provided with a button (122) to actuate lights (154) provided on the agitator (10) if it is desired to use the agitator (10) in circumstances where additional lighting is desired. The remote control system (84) may be configured to receive

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
		feedback from the control panel (74), such as system status, latitude, longitude and height coordinates. **[0035]** Once the agitator (10) is floating in the lagoon (22), the remote control system (84) is used to activate the power source (36) to cause the slurry pump (38) to draw supernatant (128) into the intake pipe (40) and out the outputs (44), (62) and (64). The remote control system (84) is used to direct the pivot pipe (58) to angle the slurry outputs (62) and (64) aft to drive the agitator (10) forward. The remote control system (84) then actuates the control panel (7 4) to direct the hydrau-lic cylinder (52) to angle the first slurry output (44) to turn the agitator (10) port or starboard as desired. The remote control system (84) is thereafter used to direct the volume of super-natant (128) drawn into the intake pipe (40) and the direction at which the supernatant (128) is expelled from the slurry outputs (44), (62) and (64). By manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon. **[0037]** The remote control system (84) may be used to cause the slurry pump (38) to expel slurry (50) more slowly from the slurry outputs (44), (62) and (64) as the agitator (10) is near the shore (142) of the lagoon (22) so as not to penetrate the lining (144) of the lagoon (22) thereby allowing the slurry (50) to escape. As the agitator (10) moves towards the center of the lagoon (22) which may range from five to forty feet deep, or more, the remote control system (84) can be used to increase the speed at which the supernatant (128) is passed from the slurry outputs (44), (62) and (64) to adequately mix the sludge (130) at the deepest portions of

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		the lagoon (22). The remote control system (84) is used to direct the agitator (10) to all desired portions of the lagoon until the crust (126) and supernatant (128) is adequately mixed with the sludge (130).
12. The vehicle of claim 4, wherein the power source is connected to the hydraulic pump by a mechanical drive and connected to the fluid pump by the mechanical drive.	**[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform.	**[0011]** In the preferred embodiment of this invention, a floating manure agitator is provided with a floating vessel and a power source. A slurry pump is coupled to the power source. A slurry intake and three slurry outputs are also coupled to the slurry pump. Two of the slurry outputs are directed outward from the floating vessel. The slurry intake is provided between the two rearward slurry outputs. An additional slurry output is provided closer to the bow of the floating vessel and is provided with a steering control to direct the slurry output to control the direction of the floating vessel. The two aft slurry outputs may be rotated more rearward to increase the speed of the floating vessel or rotated more stern to slow or reverse the speed of the floating vessel, or move downward to direct more of the supernatant into the sludge. A remote control device may be coupled to the slurry control to allow the floating vehicle to be steered from the shore. **[0024]** The vessel (12) is provided with a deck (34) and a power source (36). (FIG.1). While the power source (36) may be any suitable power source, in the preferred embodiment the power source (36) is a John Deere Tier 3 diesel engine. Depending on the desired size and efficiency of the agitator (10), the power source (36) is preferably between twenty and two-thousand horsepower, more preferably between fifty and five hundred horsepower, and

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	[0039] Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCRS-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected to an engine 130 which can preferably be operably connected to the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine. [0050] The chassis 104 can include functional engines fire-fighting equipment 200 including a water tank, 201, dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected. Additionally, foam systems, dry chemical systems, split cell foam tanks, mechanical compo-nents, electrified water and or slippery slime tanks, micro-wave impulse equipment, water cannon, hazardous materials decontamination, weapons armaments, construction aid tools and packages can be provided. [0051] The firefighting equipment 200 preferably includes cross over capabilities to perform hazardous material decon-tamination operations by merely the flip of an electronic switch and or a manual over-ride to the valve flow system. The fighting equipment 200 can be equipped with quick release pump systems that can provide various pressure and volume outputs to flow sufficient volumes of water and or foam and or dry chemicals in a fire and or hazardous materials decontami-nation mission from	most preferably between one hundred fifty and two hundred fifty horsepower. [0025] Coupled to the power source (36) is a liquid manure pump such as a slurry pump (38). In the preferred embodi-ment, the slurry pump (38) is a Cornell Redi-Prime centrifu-gal 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. [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).

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	a distance that can not endanger the operator of the vehicle 100 and enable one to quickly change from one flow rate and pressure to another as the mission dictates such as from fire to hazmat to weapons to DEW (Directed Energy Weapons) to crowd control in seconds. The fighting equipment 200 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High Pressure/Low Volume, to Low Pressure/ High Volume, to Low Pressure/Low Volume, to High Pres-sure/High Volume in "joint" work together or independent pump systems and all pump systems can be draft capable, such as gross decontamination of men and equipment to include vehicles, downed aircraft, buildings, civilians, ect; in remote areas of the world during or after a chemical agent and or gas agent (Dirty Bomb), release by an opposing enemy or terrorist cell. Hose and attachment therewith can preferably be equipped to have quick release couplings. The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electrically started and all engine horse powers can be predetermined to be capable to give the necessary power to drive the intended function(s) of the engine	
13. The vehicle of claim 12, wherein the wireless remote control is configured to operate the hydraulic motor to operate the ground engaging	**[0039]** Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCR5-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected to an engine 130 which can preferably be operably connected to	

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propulsion structure at variable speed.	the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine. **[0040]** Transmission and or tandem combination hydraulic pumps 132 and 134 can operably interconnect to the hydrau-lic (and or other propel means) wheel motors 124 and 126 and engine 130 via hydraulic lines 136A and 136B and 138A and 138B, wherein lines 136A and 138A can preferably connect to flow divider 140 and 142 (and or combination of flow divider manifolds) to regulate hydraulic flow to the wheel motors 124 and 126 and lines 136B and 138B are return lines to the respective pumps 132 and 134. **[0041]** There can be a plurality of flow dividers and or combination of flow divider manifolds 140 and 142 to regulate and distribute flow in the hydraulic lines 136A and 136B and 138A and 138B, respectively, to motors 124 and 126 on an equalized basis. Operably interposed between the flow dividers 140 and 142, pumps 132 and 134, and motors 124 and 126 are flushing valves 146 for flushing hydraulic fluid to aid in fluid cooling and excess fluid. **[0042]** FIGS. 5-7 depict half of the hydraulic system and thus it is understood that components not mentioned here are likewise operatively disposed in the vehicle 100. Recirculation valves 150 can be operably interposed between the wheel motors 124 and 126 and high speed shift valves 154 operably connect to one flow divider and or combination of flow divider manifolds 140. A second speed valve 156 and brake	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	valve 157 can be operably interposed between pump 130 and one of each of the wheel motors 124 and 126. **[0045]** Importantly, the ability to control the power system provides for counter rotation of wheels 120 and 122 (e.g. left) rotate and or drive in forward motion while wheels 120 and 122 (e.g., right) rotate and or drive in reverse motion or vice versa, skid steering where one side (e.g. left) of wheels 120 and 122 are precluded from moving and the other side (e.g., right) wheels 120 and 122 are under power of movement, as well as forward and reverse movement of wheels 120 and 122 and turn steer capabilities where as wheels 120 and 122 (e.g., left) rotate or drive forward at full power and wheels 120 and 122 (e.g., right) rotate or drive at a reduced power or vice versa which creates a slow, smooth gradual turning like that of an automobile. Preferably, a joy stick 164 can be operably connected to the control processor 160 and be equipped with contact switches such that actuation of the joy stick in a predetermined quadrant direction or part thereof will initiate one of the aforementioned operations of the control processor. For example, the forward movement of the stick 164 moves the vehicle 100 forward, backward movement moves vehicle 100 back, left or right movement produces a turn steer and or skid steer of one or the other side wheels 120 or 122 to effect a turn based on the position of the joy stick at the moment (e.g. from the point of neutral, half way through the axis of side travel of the joystick the vehicle will be in turn steer mode. As the operator or driver passes the half way axis point the vehicle 100 transitions into the skid steer mode then onto the counter-rotation mode), a diagonal movement produces a turn steer mode of the wheels disposed on opposite sides of the vehicle 100. The vehicle 100 includes more than four wheels, such as six and	

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	preferably eight wheels but could be of even a greater number of wheels which are connected to the vehicle and powered by independent hydraulic and or other propel means wheel motors. **[0054]** It is contemplated that a direct drive system can be employed wherein one or more wheels is driven by a drive shaft with suitable yoke connections, a hydrostatic drive transmission or via a hydraulic system as is known in the art. One or more drive systems can be employed on the vehicle 100 providing the user with multiple drive mechanism options. **[0056]** The aforesaid components making up the drive sys-tem can be controlled by a processor 160 which can respond from the joy stick 164 input. The drive system can be pro-grammed to be fully automatic through all speeds or manu-ally controlled. The drive system can also have program-mable down-shift inhibit points programmed into the processor 160 which would prevent the drive system from reacting to a shift or directional signal if the action would result in an engine over-speed and/or damage situation or to prevent accidental directional shuttle shifting at speeds which would cause a drive line package damage, premature counter rotation, skid steer movement or operator's discomfort, i.e., neck and back injuries, (whip lash). **[0064]** Manual controls provide for operation of the vehicle 100. However, the operations of each unit described herein can be performed by remote control as part of processor 160 which is operably quick connectable to the vehicle 100 hav-ing suitable connections therewith for each aforesaid compo-nent as well as transceiver equipment associated therewith enabling the processor 160 to be reprogrammed on a need to need basis. This enables the vehicle 100 to be remotely con-trolled via line of	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	sight, gps, or by air via aircraft such as the so-called "Preditor." Remote control mechanics, servos, hardware, wiring harnesses can be quick releasable to facili-tate easy replacement of any faulty components in case of damage or failure. A manual over-ride can be incorporated should the vehicle 100 need to be taken out of autonomous, unmanned mode for whatever reason and vice versa.	
14. The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels.	**[0024]** Accordingly, the present invention is an improve-ment on the prior invention and is directed to an all-terrain vehicle. One embodiment of the vehicle includes a first chas-sis and second chassis hingedly connected to the first chassis, each of the first and second chassis including a plurality of wheels which are operably connected to a hydraulic motor (or other propelling means, such as electric wheel). In this regard, the connection can be made for up and down movement (vertical) (oscillation) for unlevel terrain movement compen-sation and or cross hingedly connected for both up and down movement (vertical) (oscillation) as well as side to side move-ment (horizontal)(oscillation) for unlevel terrain movement compensation. The hydraulic motor is operably connected to an engine which is operably connected to the first chassis and can also be connected to the second chassis. **[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic	

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	lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform. **[0039]** Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCR5-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected to an engine 130 which can preferably be operably connected to the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine.	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0045] Importantly, the ability to control the power system provides for counter rotation of wheels 120 and 122 (e.g. left) rotate and or drive in forward motion while wheels 120 and 122 (e.g., right) rotate and or drive in reverse motion or vice versa, skid steering where one side (e.g. left) of wheels 120 and 122 are precluded from moving and the other side (e.g., right) wheels 120 and 122 are under power of movement, as well as forward and reverse movement of wheels 120 and 122 and turn steer capabilities where as wheels 120 and 122 (e.g., left) rotate or drive forward at full power and wheels 120 and 122 (e.g., right) rotate or drive at a reduced power or vice versa which creates a slow, smooth gradual turning like that of an automobile. Preferably, a joy stick 164 can be operably connected to the control processor 160 and be equipped with contact switches such that actuation of the joy stick in a predetermined quadrant direction or part thereof will initiate one of the aforementioned operations of the control processor. For example, the forward movement of the stick 164 moves the vehicle 100 forward, backward movement moves vehicle 100 back, left or right movement produces a turn steer and or skid steer of one or the other side wheels 120 or 122 to effect a turn based on the position of the joy stick at the moment (e.g. from the point of neutral, half way through the axis of side travel of the joystick the vehicle will be in turn steer mode. As the operator or driver passes the half way axis point the vehicle 100 transitions into the skid steer mode then onto the counter-rotation mode), a diagonal movement produces a turn steer mode of the wheels disposed on opposite sides of the vehicle 100. The vehicle 100 includes more than four wheels, such as six and preferably eight wheels but could be of even a greater number of wheels which are connected to the vehicle and powered by independent hydraulic and or other propel means wheel motors.	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	[0054] It is contemplated that a direct drive system can be employed wherein one or more wheels is driven by a drive shaft with suitable yoke connections, a hydrostatic drive transmission or via a hydraulic system as is known in the art. One or more drive systems can be employed on the vehicle 100 providing the user with multiple drive mechanism options.	
15. The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels.	**[0024]** Accordingly, the present invention is an improve-ment on the prior invention and is directed to an all-terrain vehicle. One embodiment of the vehicle includes a first chas-sis and second chassis hingedly connected to the first chassis, each of the first and second chassis including a plurality of wheels which are operably connected to a hydraulic motor (or other propelling means, such as electric wheel). In this regard, the connection can be made for up and down movement (vertical) (oscillation) for unlevel terrain movement compen-sation and or cross hingedly connected for both up and down movement (vertical) (oscillation) as well as side to side move-ment (horizontal)(oscillation) for unlevel terrain movement compensation. The hydraulic motor is operably connected to an engine which is operably connected to the first chassis and can also be connected to the second chassis. **[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform.	
16. The vehicle of claim 14, wherein the set of wheels comprises four powered wheels, each wheel of the set of wheels is independently powered and is operable at variable speed.	**[0024]** Accordingly, the present invention is an improve-ment on the prior invention and is directed to an all-terrain vehicle. One embodiment of the vehicle includes a first chas-sis and second chassis hingedly connected to the first chassis, each of the first and second chassis including a plurality of wheels which are operably connected to a hydraulic motor (or other propelling means, such as electric wheel). In this regard, the connection can be made for up and down movement (vertical) (oscillation) for unlevel terrain movement compen-sation and or cross hingedly connected for both up and down movement (vertical) (oscillation) as well as side to side move-ment (horizontal)(oscillation) for unlevel terrain movement compensation. The hydraulic motor is operably connected to an engine which is operably connected to the first chassis and can also be connected to the second chassis.	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	0025] A transmission pump operably interconnects the hydraulic motors and engine via hydraulic lines and prefer-ably connects to a flow divider and or a combination of flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. There can be a plu-rality of flow dividers and or flow divider manifolds to regu-late and distribute flow in the hydraulic lines to each wheel motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid compo-nents. These valves could either manually or automatically be sensing pressure changes and isolate a damaged wheel motor from the rest of the hydraulic system preventing loss of power and hydraulic fluid from the rest of the hydraulic system. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can preferably automatically as well as manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Thus, if there is a leak in one wheel motor or other hydraulic component, this can be stopped and hydraulic fluid redirected to the remaining wheel motors and other hydraulic components thereby providing drive and PTO (Power Take Off) for the remaining wheel motors and other hydraulic components. The vehicle thus enables a series of backup drive mechanisms. A central con-trol processor can be provided on the vehicle and is operably connected to the sensors and Isolation and speed shift valves and power system, such as that provided by the engine or separate battery, to control operation of each of the aforemen-tioned movable components. Importantly, this provides for counter rotation of wheels where one side of wheels turn in a forward motion while at the exact same time the other side of wheels tum in a reverse motion and vice versa depending on which direction the operator decides to	

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	execute the counter rotation e.g. (left or right, in forward or reverse), skid steering where one side of wheels are precluded from moving and the other side wheels are under power of movement tum steer like an automobile where one side receives less power than the other at the wheel motors thereby creating a smooth left or right turn, as well as forward and reverse movement of wheels. Preferably, a joy stick can be operably connected to the control processor and be equipped with contact switches such that actuation of the joy stick in a predetermined quad-rant direction or part thereof will initiate one of the aforementioned operations of the control processor thereof will initiate one of the aforementioned operations of the control processor. **[0026]** In another embodiment of the invention, the vehicle includes more than four wheels, such as six and preferably eight wheels but can contain an even greater number of wheels which are connected to the vehicle and powered by independent hydraulic or other propulsion power such as electric, chain, belt drive, wheel motors. The wheel motors likewise operably connect to an engine on the vehicle via a transmission and or hydraulic pump, which is operably inter-connected to the hydraulic or other propel drive means to the wheel motors and engine via hydraulic lines and preferably connects to a flow divider and or combination flow divider manifolds to regulate hydraulic flow to the wheel motors and other hydraulic components. Similarly, there can be a plural-ity of flow dividers and or combination of flow divider mani-folds to regulate and distribute flow in the hydraulic lines to each motor on an equalized basis. Isolation valves can be operably interposed between the wheel motors and aforesaid components. Additionally, sensors can be provided to detect when there is a pressure differential change in the connections and the system can	

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Claim	Carrier I (US 2012/0185129)	Puck (2014/0112093)
	preferably automatically and or manually actuate the appropriate isolation valves in a manner to main-tain flow equilibration in the system. Stability can be accom-plished when traveling over rough ground and includes a frame having a sealed hull to provide the vehicle with buoy-ancy. A platform exists on the frame above the hull which includes a plurality of open surfaces through which a quick release connector may be inserted to secure a functional unit or aid unit to the platform. **[0039]** Each of the first and second chassis 102 and 104 include a plurality of wheels 120 and 122, respectively, which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126, respectively. The hydraulic or other propel means wheel motors 124 and 126 can preferably be of a direct wheel mount type, such as the Bosch Rexroth MCR5-380 which are operably connected a transmission and or hydraulic pump or a combination of pumps which are operably connected to an engine 130 which can preferably be operably connected to the first chassis 102 or optionally second chassis 104. The engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) @3500 RPM FPT (Fiat Power Train) diesel engine. **[0040]** Transmission and or tandem combination hydraulic pumps 132 and 134 can operably interconnect to the hydrau-lic (and or other propel means) wheel motors 124 and 126 and engine 130 via hydraulic lines 136A and 136B and 138A and 138B, wherein lines 136A and 138A can preferably connect to flow divider 140 and 142 (and or combination of flow divider manifolds) to regulate hydraulic flow to the wheel motors 124 and 126 and lines 136B and 138B are return lines to the respective pumps 132 and 134.	

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