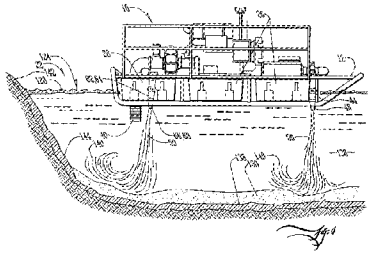
Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	[0029] Releasably coupled to the second slurry output (62) and third slurry output (64) are a pair of nozzles (66) and (68) pivotably coupled to the vessel (12). The second slurry output (62) and third slurry output (64) are oriented and configured to 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:**  **Figure 6:**	

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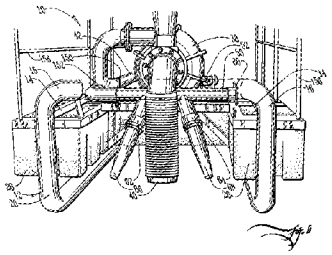
Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	 **Claim 14:** A liquid manure agitator comprising: (a) a floating vessel; (b) a power source provided on the vessel; (c) a liquid manure pump coupled to the power source; (d) a liquid manure intake coupled to the liquid manure pump; (e) a first liquid manure nozzle coupled to the liquid manure pump; (f) a second liquid manure nozzle coupled to the liquid manure pump; and (g) a steering control coupled to the first liquid manure nozzle. **Claim 20:** A liquid manure agitator comprising: (a) a frame; (b) a floatation device coupled to the frame; (c) a power source coupled to the frame; (d) a liquid manure pump coupled to the power source; (e) a liquid manure intake coupled to the liquid manure pump; (f) a first liquid manure nozzle coupled to the liquid manure pump and positioned stem of the liquid manure intake;	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	(g) a steering control coupled to the first liquid manure nozzle; (h) a second liquid manure nozzle coupled to the liquid manure pump and positioned aft of the first liquid manure nozzle wherein the second manure nozzle is directed port; (i) a third liquid manure nozzle coupled to the liquid manure pump and positioned aft of the first liquid manure nozzle wherein the third manure nozzle is directed starboard; and (j) a wireless remote control coupled to the steering control.	
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 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.	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	[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 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.	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	[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 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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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). **Claim 2:** The floating slurry agitator of claim 1, further comprising a wireless remote control coupled to the steering control. **Claim 15:** The liquid manure agitator of claim 14, further comprising a wireless remote control coupled to the steering control.	
12. The vehicle of claim 4, wherein the power source is connected to the hydraulic pump by a	**[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
mechanical drive and connected to the fluid pump by the mechanical drive.	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 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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	(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).	
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.	**[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. **[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 (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	**[0043]** Referring to FIG. 1, an illustrative embodiment of a vehicle 10 is shown. As detailed further herein, vehicle 10 may be a tracked ATV that includes ground engaging members, illustratively a left side track member 12 and a right side track member 14, a powertrain assembly 500 (FIG. 13), a frame assembly 30, a body or tub 40 (FIG. 4), a roll cage assembly 50, and a suspension assembly 70 (FIG. 4). Vehicle 10 may be configured for military applications and is configured to travel through various terrains or surfaces. More particularly, vehicle 10 is configured for both land an amphibious operation. Additionally, vehicle 10 may be operated by remote control. In one embodiment, vehicle 10 may be configured to travel at speeds of approximately 50 mph during land operation. **[0083]** A hydraulic pump assembly 518 is also coupled to engine 502 and is driven by the crankshaft of engine 502. As described herein, hydraulic pump assembly 518 is operative to drive hydraulic motor 552 of steering and drive assembly 508 to facilitate zero-speed turning and low-speed turning of vehicle

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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.	10. In one embodiment, hydraulic pump assembly 518 includes a dual hydraulic pump in a dual stage configu-ration, i.e., a pair of hydraulic pumps coupled in a series relationship (see FIG. 18, for example). Hydraulic lines are routed from hydraulic pump assembly 518 to hydraulic motor 552 of steering and drive assembly 508. In one embodiment, hydraulic pump assembly 518 drives other hydraulic components of vehicle 10. **[0090]** In one embodiment, to keep a constant velocity of vehicle 10 during a turning operation, the outer side drive axle 534 (relative to the turning direction) is faster than a neutral vehicle (i.e., the requested speed of the vehicle 10), and the inner side drive axle 534 is driven the same amount slower than the neutral vehicle speed. In the illustrated embodiment, intermediate shaft 572 of steering gear assembly 562 is operative to invert the rotational direction of the ring gear 568 of planetary gear assembly 564 relative to the rotational direction of ring gear 568 of planetary gear assembly 566. As such, the steering input provided with hydraulic motor 552 causes one drive axle 534 to drive faster and one drive axle 534 to drive slower relative to the neutral vehicle speed to provide the turning effect. **[0121]** 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. In one embodiment, vehicle 10 is operative to drive autonomously without human input.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
14. The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels.		**[0003]** Generally, all-terrain vehicles ("ATVs") and utility vehicles ("UVs") are used to carry one or more passengers over a variety of terrain. More particularly, some ATVs and UVs may include side-by-side seating, in which a passenger may be seated next to the driver at the front of the vehicle. Side-by-side vehicles may also include a rear seating area to accommodate additional passengers in the vehicle. Additionally, ATVs and UVs may provide a cargo area in the front and/or the rear of the vehicle in order to carry cargo. ATVs and UVs include ground-engaging members, which may be tires, tracks, or any other device for moving the vehicle across the ground. **[0062]** Referring now to FIGS. 8, 9A, and 9B, suspension assembly 70 includes a plurality of lower guide or carrier rollers 72, a plurality of upper carrier rollers 73, drive units 590, 592, at least one idler wheel 79, and a plurality of load wheels 75. Carrier rollers 72 and 73, drive units 590, 592, idler wheel 79, and/or load wheels 75 may be comprised of metallic and/or polymeric materials. For example, as shown in FIGS. 9A and 9B, at least one load wheel 75 is configured as a non-pneumatic tire while carrier rollers 72, 73 and idler wheel 79 are configured as spoked wheels. In one embodi-ment, these spoked wheels are made of a polymer. Non-pneumatic tires may be comprised of a polymeric material and may be used to increase the compliance of suspension assembly 70 and track members 12, 14 during operation of vehicle 10.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		[0063] Carrier rollers 72, 73, drive units 590, 592, and load wheels 75 are in contact with track members 12, 14 and are supported on side walls 48 of tub 40. In one embodiment, idler wheels 79 are connected to suspension members. Drive units 590, 592 may be supported by front axle assembly 532. Drive units 590, 592 are profiled to engage track members 12, 14, as detailed further herein. Upper carrier rollers 73 may be fixed to side walls 48 of tub 40. Upper carrier rollers 73 and idler wheel 79 are configured to maintain the tension in track members 12, 14. In one embodiment, for example on vehicle 10" of FIG. 3, at least one of upper carrier rollers 73 may be partially covered with a shroud 122. Shroud 122 may be integrally formed with side fender 18" or may be coupled thereto and/or to side body panel 27" with conventional fas-teners. **[0064]** Lower carrier rollers 72 and load wheels 75 may be operably coupled to side walls 48 of tub 40 with a plurality of shafts 76 and a plurality of control arms 78. As shown in FIGS. 4, 6, 8, 9A, and 9B, shafts 76 are coupled to side walls 48 with conventional fasteners (e.g., welds, rivets, bolts, adhesive) and an upper end of control arms 78 may be pivot-ally coupled to shafts 76. Lower ends of control arms 78 are operably coupled to lower carrier rollers 72 and load wheels 75. Load wheels 75 include a front load wheel 75a and a rear load wheel 75b and are configured to support the majority of the load of vehicle 10. Lower carrier rollers 72 are configured to support a portion of the load of vehicle 10 and also are configured to guide track members

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		12, 14 to prevent derail-ment. For example, load wheels 75 may support approxi-mately 75% of the load of vehicle 10 while lower carrier rollers 72 may support approximately 25% of the load of vehicle 10. **[0092]** Referring to FIG. 18, an exemplary hydraulic steering system 600 is illustrated. Engine 502 drives a first hydraulic pump 602 and a second hydraulic pump 604 of hydraulic pump assembly 518. A control valve 606, 608 is coupled at the output of each pump 602, 604, respectively. Gearbox 510 drives drive shaft 506 to drive hydraulic pump 550 of steering and drive assembly 508, and a control valve 610 is coupled at the output of pump 550. The hydraulic components of FIG. 18 are coupled together view hydraulic hoses or lines as illustrated. Exemplary pump displacements, pressure values, pump speeds, and other values are shown in FIG. 18 to illustrate an example embodiment of hydraulic steering system 600, and other suitable values and specifications may be provided depending on system configuration.
15. The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels.		**[0003]** Generally, all-terrain vehicles ("ATVs") and utility vehicles ("UVs") are used to carry one or more passengers over a variety of terrain. More particularly, some ATVs and UVs may include side-by-side seating, in which a passenger may be seated next to the driver at the front of the vehicle. Side-by-side vehicles may also include a rear seating area to accommodate additional passengers in the vehicle. Additionally, ATVs and UVs may provide a cargo area in the front and/or the rear of the vehicle in order to carry cargo. ATVs and UVs include ground-

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		engaging members, which may be tires, tracks, or any other device for moving the vehicle across the ground. **[0057]** Front members 52, rear members 54, and cross members 56, 57 may have a profiled cross-section in a figure-eight or hourglass configuration. As such, front members 52, rear members 54, and cross members 56, 57 include recessed portions for receiving accessories, such as windows, doors, a front windshield, a rear windshield, and/or a roof, which may enclose operator area 20. The recessed portions of roll cage assembly 50 may include sealing members in order to sealingly enclose operator area 20. Additional details of the profiled configuration of front members 52, rear members 54, and cross members 56, 57, as well as the enclosing accessories (e.g., doors, windshields, windows, and/or a roof) are disclosed in U.S. Patent Application Publication No. 2013/0033070, filed on Jun. 8, 2012, the complete disclosure of which is expressly incorporated by reference herein. If operator area 20 is enclosed, operator area 20 may be configured to supply heat, defrost, and/or air conditioning, as well as other accessories, for the comfort and convenience of the operator and the passenger. **[0062]** Referring now to FIGS. 8, 9A, and 9B, suspension assembly 70 includes a plurality of lower guide or carrier rollers 72, a plurality of upper carrier rollers 73, drive units 590, 592, at least one idler wheel 79, and a plurality of load wheels 75. Carrier rollers 72 and 73, drive units 590, 592, idler wheel

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		79, and/or load wheels 75 may be comprised of metallic and/or polymeric materials. For example, as shown in FIGS. 9A and 9B, at least one load wheel 75 is configured as a non-pneumatic tire while carrier rollers 72, 73 and idler wheel 79 are configured as spoked wheels. In one embodi-ment, these spoked wheels are made of a polymer. Non-pneumatic tires may be comprised of a polymeric material and may be used to increase the compliance of suspension assembly 70 and track members 12, 14 during operation of vehicle 10. **[0063]** Carrier rollers 72, 73, drive units 590, 592, and load wheels 75 are in contact with track members 12, 14 and are supported on side walls 48 of tub 40. In one embodiment, idler wheels 79 are connected to suspension members. Drive units 590, 592 may be supported by front axle assembly 532. Drive units 590, 592 are profiled to engage track members 12, 14, as detailed further herein. Upper carrier rollers 73 may be fixed to side walls 48 of tub 40. Upper carrier rollers 73 and idler wheel 79 are configured to maintain the tension in track members 12, 14. In one embodiment, for example on vehicle 10" of FIG. 3, at least one of upper carrier rollers 73 may be partially covered with a shroud 122. Shroud 122 may be integrally formed with side fender 18" or may be coupled thereto and/or to side body panel 27" with conventional fas-teners. **[0064]** Lower carrier rollers 72 and load wheels 75 may be operably coupled to side walls 48 of tub 40 with a plurality of shafts 76 and a plurality of control arms 78. As shown in FIGS. 4, 6, 8, 9A, and 9B,

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		shafts 76 are coupled to side walls 48 with conventional fasteners (e.g., welds, rivets, bolts, adhesive) and an upper end of control arms 78 may be pivot-ally coupled to shafts 76. Lower ends of control arms 78 are operably coupled to lower carrier rollers 72 and load wheels 75. Load wheels 75 include a front load wheel 75a and a rear load wheel 75b and are configured to support the majority of the load of vehicle 10. Lower carrier rollers 72 are configured to support a portion of the load of vehicle 10 and also are configured to guide track members 12, 14 to prevent derail-ment. For example, load wheels 75 may support approxi-mately 75% of the load of vehicle 10 while lower carrier rollers 72 may support approximately 25% of the load of vehicle 10. **[0083]** A hydraulic pump assembly 518 is also coupled to engine 502 and is driven by the crankshaft of engine 502. As described herein, hydraulic pump assembly 518 is operative to drive hydraulic motor 552 of steering and drive assembly 508 to facilitate zero-speed turning and low-speed turning of vehicle 10. In one embodiment, hydraulic pump assembly 518 includes a dual hydraulic pump in a dual stage configuration, i.e., a pair of hydraulic pumps coupled in a series relationship (see FIG. 18, for example). Hydraulic lines are routed from hydraulic pump assembly 518 to hydraulic motor 552 of steering and drive assembly 508. In one embodiment, hydraulic pump assembly 518 drives other hydraulic components of vehicle 10. **[0084]** In operation, to drive vehicle 10 straight forward, steering and drive assembly 508 applies

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		power from engine 502 to both drive units 590, 592 (FIG. 16) such that both left and right tracks 12, 14 rotate at the same speed. To steer the vehicle 10 based on the steering angle of steering wheel 529 (FIG. 8), steering and drive assembly 508 applies a differential to the driving speeds of each drive unit 590, 592 (FIG. 16). The speed difference between the left and right drive units 590, 592 is different depending on the desired corner radius that vehicle 10 is driven. **[0085]** In one embodiment, the differential speed of the two driving units 590, 592 is achieved by a controlled variation of the drive ratio between the two driving units 590, 592, and not by applying brakes 536. As such, the distribution of the torque applied to drive units 590, 592 is adjusted without changing the total torque applied. The torque reduced on the one side of vehicle 10 is applied to the other side of vehicle 10. Based on this behavior, the vehicle 10 keeps a constant driving speed during steering. In an alternative embodiment, brakes 536 are actuated to assist with steering vehicle 10. **[0090]** In one embodiment, to keep a constant velocity of vehicle 10 during a turning operation, the outer side drive axle 534 (relative to the turning direction) is faster than a neutral vehicle (i.e., the requested speed of the vehicle 10), and the inner side drive axle 534 is driven the same amount slower than the neutral vehicle speed. In the illustrated embodiment, intermediate shaft 572 of steering gear assembly 562 is operative to invert the rotational

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		direction of the ring gear 568 of planetary gear assembly 564 relative to the rotational direction of ring gear 568 of planetary gear assembly 566. As such, the steering input provided with hydraulic motor 552 causes one drive axle 534 to drive faster and one drive axle 534 to drive slower relative to the neutral vehicle speed to provide the turning effect. **[0092]** Referring to FIG. 18, an exemplary hydraulic steering system 600 is illustrated. Engine 502 drives a first hydraulic pump 602 and a second hydraulic pump 604 of hydraulic pump assembly 518. A control valve 606, 608 is coupled at the output of each pump 602, 604, respectively. Gearbox 510 drives drive shaft 506 to drive hydraulic pump 550 of steering and drive assembly 508, and a control valve 610 is coupled at the output of pump 550. The hydraulic components of FIG. 18 are coupled together view hydraulic hoses or lines as illustrated. Exemplary pump displacements, pressure values, pump speeds, and other values are shown in FIG. 18 to illustrate an example embodiment of hydraulic steering system 600, and other suitable values and specifications may be provided depending on system configuration.
16. The vehicle of claim 14, wherein the set of wheels comprises four powered wheels, each wheel of the set of wheels is independently		**[0003]** Generally, all-terrain vehicles ("ATVs") and utility vehicles ("UVs") are used to carry one or more passengers over a variety of terrain. More particularly, some ATVs and UVs may include side-by-side seating, in which a passenger may be seated next to the driver at the front of the vehicle. Side-by-side vehicles may also include a rear seating area to accommodate additional passengers in the vehicle.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
powered and is operable at variable speed.		Additionally, ATVs and UVs may provide a cargo area in the front and/or the rear of the vehicle in order to carry cargo. ATVs and UVs include ground-engaging members, which may be tires, tracks, or any other device for moving the vehicle across the ground. **[0057]** Front members 52, rear members 54, and cross members 56, 57 may have a profiled cross-section in a figure-eight or hourglass configuration. As such, front members 52, rear members 54, and cross members 56, 57 include recessed portions for receiving accessories, such as windows, doors, a front windshield, a rear windshield, and/or a roof, which may enclose operator area 20. The recessed portions of roll cage assembly 50 may include sealing members in order to sealingly enclose operator area 20. Additional details of the profiled configuration of front members 52, rear members 54, and cross members 56, 57, as well as the enclosing accessories (e.g., doors, windshields, windows, and/or a roof) are disclosed in U.S. Patent Application Publication No. 2013/0033070, filed on Jun. 8, 2012, the complete disclosure of which is expressly incorporated by reference herein. If operator area 20 is enclosed, operator area 20 may be configured to supply heat, defrost, and/or air conditioning, as well as other accessories, for the comfort and convenience of the operator and the passenger. **[0062]** Referring now to FIGS. 8, 9A, and 9B, suspension assembly 70 includes a plurality of lower guide or carrier rollers 72, a plurality of upper carrier

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		rollers 73, drive units 590, 592, at least one idler wheel 79, and a plurality of load wheels 75. Carrier rollers 72 and 73, drive units 590, 592, idler wheel 79, and/or load wheels 75 may be comprised of metallic and/or polymeric materials. For example, as shown in FIGS. 9A and 9B, at least one load wheel 75 is configured as a non-pneumatic tire while carrier rollers 72, 73 and idler wheel 79 are configured as spoked wheels. In one embodi-ment, these spoked wheels are made of a polymer. Non-pneumatic tires may be comprised of a polymeric material and may be used to increase the compliance of suspension assembly 70 and track members 12, 14 during operation of vehicle 10. **[0063]** Carrier rollers 72, 73, drive units 590, 592, and load wheels 75 are in contact with track members 12, 14 and are supported on side walls 48 of tub 40. In one embodiment, idler wheels 79 are connected to suspension members. Drive units 590, 592 may be supported by front axle assembly 532. Drive units 590, 592 are profiled to engage track members 12, 14, as detailed further herein. Upper carrier rollers 73 may be fixed to side walls 48 of tub 40. Upper carrier rollers 73 and idler wheel 79 are configured to maintain the tension in track members 12, 14. In one embodiment, for example on vehicle 10" of FIG. 3, at least one of upper carrier rollers 73 may be partially covered with a shroud 122. Shroud 122 may be integrally formed with side fender 18" or may be coupled thereto and/or to side body panel 27" with conventional fas-teners.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		[0064] Lower carrier rollers 72 and load wheels 75 may be operably coupled to side walls 48 of tub 40 with a plurality of shafts 76 and a plurality of control arms 78. As shown in FIGS. 4, 6, 8, 9A, and 9B, shafts 76 are coupled to side walls 48 with conventional fasteners (e.g., welds, rivets, bolts, adhesive) and an upper end of control arms 78 may be pivot-ally coupled to shafts 76. Lower ends of control arms 78 are operably coupled to lower carrier rollers 72 and load wheels 75. Load wheels 75 include a front load wheel 75a and a rear load wheel 75b and are configured to support the majority of the load of vehicle 10. Lower carrier rollers 72 are configured to support a portion of the load of vehicle 10 and also are configured to guide track members 12, 14 to prevent derail-ment. For example, load wheels 75 may support approxi-mately 75% of the load of vehicle 10 while lower carrier rollers 72 may support approximately 25% of the load of vehicle 10. [0083] A hydraulic pump assembly 518 is also coupled to engine 502 and is driven by the crankshaft of engine 502. As described herein, hydraulic pump assembly 518 is operative to drive hydraulic motor 552 of steering and drive assembly 508 to facilitate zero-speed turning and low-speed turning of vehicle 10. In one embodiment, hydraulic pump assembly 518 includes a dual hydraulic pump in a dual stage configu-ration, i.e., a pair of hydraulic pumps coupled in a series relationship (see FIG. 18, for example). Hydraulic lines are routed from hydraulic pump assembly 518 to hydraulic motor 552 of steering and drive assembly 508. In one embodiment,

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		hydraulic pump assembly 518 drives other hydraulic components of vehicle 10. **[0084]** In operation, to drive vehicle 10 straight forward, steering and drive assembly 508 applies power from engine 502 to both drive units 590, 592 (FIG. 16) such that both left and right tracks 12, 14 rotate at the same speed. To steer the vehicle 10 based on the steering angle of steering wheel 529 (FIG. 8), steering and drive assembly 508 applies a differential to the driving speeds of each drive unit 590, 592 (FIG. 16). The speed difference between the left and right drive units 590, 592 is different depending on the desired corner radius that vehicle 10 is driven. **[0085]** In one embodiment, the differential speed of the two driving units 590, 592 is achieved by a controlled variation of the drive ratio between the two driving units 590, 592, and not by applying brakes 536. As such, the distribution of the torque applied to drive units 590, 592 is adjusted without changing the total torque applied. The torque reduced on the one side of vehicle 10 is applied to the other side of vehicle 10. Based on this behavior, the vehicle 10 keeps a constant driving speed during steering. In an alternative embodiment, brakes 536 are actuated to assist with steering vehicle 10. **[0090]** In one embodiment, to keep a constant velocity of vehicle 10 during a turning operation, the outer side drive axle 534 (relative to the turning direction) is faster than a neutral vehicle (i.e., the

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		requested speed of the vehicle 10), and the inner side drive axle 534 is driven the same amount slower than the neutral vehicle speed. In the illustrated embodiment, intermediate shaft 572 of steering gear assembly 562 is operative to invert the rotational direction of the ring gear 568 of planetary gear assembly 564 relative to the rotational direction of ring gear 568 of planetary gear assembly 566. As such, the steering input provided with hydraulic motor 552 causes one drive axle 534 to drive faster and one drive axle 534 to drive slower relative to the neutral vehicle speed to provide the turning effect. **[0092]** Referring to FIG. 18, an exemplary hydraulic steering system 600 is illustrated. Engine 502 drives a first hydraulic pump 602 and a second hydraulic pump 604 of hydraulic pump assembly 518. A control valve 606, 608 is coupled at the output of each pump 602, 604, respectively. Gearbox 510 drives drive shaft 506 to drive hydraulic pump 550 of steering and drive assembly 508, and a control valve 610 is coupled at the output of pump 550. The hydraulic components of FIG. 18 are coupled together view hydraulic hoses or lines as illustrated. Exemplary pump displacements, pressure values, pump speeds, and other values are shown in FIG. 18 to illustrate an example embodiment of hydraulic steering system 600, and other suitable values and specifications may be provided depending on system configuration.
17. The vehicle of claim 16, wherein the wheels are operable at		**[0003]** Generally, all-terrain vehicles ("ATVs") and utility vehicles ("UVs") are used to carry one or more passengers over a variety of terrain. More

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
variable speed by the hydraulic motor.		particularly, some ATVs and UVs may include side-by-side seating, in which a passenger may be seated next to the driver at the front of the vehicle. Side-by-side vehicles may also include a rear seating area to accommodate additional passengers in the vehicle. Additionally, ATVs and UVs may provide a cargo area in the front and/or the rear of the vehicle in order to carry cargo. ATVs and UVs include ground-engaging members, which may be tires, tracks, or any other device for moving the vehicle across the ground. **[0057]** Front members 52, rear members 54, and cross members 56, 57 may have a profiled cross-section in a figure-eight or hourglass configuration. As such, front members 52, rear members 54, and cross members 56, 57 include recessed portions for receiving accessories, such as windows, doors, a front windshield, a rear windshield, and/or a roof, which may enclose operator area 20. The recessed portions of roll cage assembly 50 may include sealing members in order to sealingly enclose operator area 20. Additional details of the profiled configuration of front members 52, rear members 54, and cross members 56, 57, as well as the enclosing accessories (e.g., doors, windshields, windows, and/or a roof) are disclosed in U.S. Patent Application Publication No. 2013/0033070, filed on Jun. 8, 2012, the complete disclosure of which is expressly incorporated by reference herein. If operator area 20 is enclosed, operator area 20 may be configured to supply heat, defrost, and/or air conditioning, as well as other accessories, for the

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		comfort and convenience of the operator and the passenger. **[0062]** Referring now to FIGS. 8, 9A, and 9B, suspension assembly 70 includes a plurality of lower guide or carrier rollers 72, a plurality of upper carrier rollers 73, drive units 590, 592, at least one idler wheel 79, and a plurality of load wheels 75. Carrier rollers 72 and 73, drive units 590, 592, idler wheel 79, and/or load wheels 75 may be comprised of metallic and/or polymeric materials. For example, as shown in FIGS. 9A and 9B, at least one load wheel 75 is configured as a non-pneumatic tire while carrier rollers 72, 73 and idler wheel 79 are configured as spoked wheels. In one embodi-ment, these spoked wheels are made of a polymer. Non-pneumatic tires may be comprised of a polymeric material and may be used to increase the compliance of suspension assembly 70 and track members 12, 14 during operation of vehicle 10. **[0063]** Carrier rollers 72, 73, drive units 590, 592, and load wheels 75 are in contact with track members 12, 14 and are supported on side walls 48 of tub 40. In one embodiment, idler wheels 79 are connected to suspension members. Drive units 590, 592 may be supported by front axle assembly 532. Drive units 590, 592 are profiled to engage track members 12, 14, as detailed further herein. Upper carrier rollers 73 may be fixed to side walls 48 of tub 40. Upper carrier rollers 73 and idler wheel 79 are configured to maintain the tension in track members 12, 14. In one embodiment, for example on vehicle 10" of FIG. 3, at least one of upper carrier rollers 73 may be

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		partially covered with a shroud 122. Shroud 122 may be integrally formed with side fender 18" or may be coupled thereto and/or to side body panel 27" with conventional fas-teners. **[0064]** Lower carrier rollers 72 and load wheels 75 may be operably coupled to side walls 48 of tub 40 with a plurality of shafts 76 and a plurality of control arms 78. As shown in FIGS. 4, 6, 8, 9A, and 9B, shafts 76 are coupled to side walls 48 with conventional fasteners (e.g., welds, rivets, bolts, adhesive) and an upper end of control arms 78 may be pivot-ally coupled to shafts 76. Lower ends of control arms 78 are operably coupled to lower carrier rollers 72 and load wheels 75. Load wheels 75 include a front load wheel 75a and a rear load wheel 75b and are configured to support the majority of the load of vehicle 10. Lower carrier rollers 72 are configured to support a portion of the load of vehicle 10 and also are configured to guide track members 12, 14 to prevent derail-ment. For example, load wheels 75 may support approxi-mately 75% of the load of vehicle 10 while lower carrier rollers 72 may support approximately 25% of the load of vehicle 10. **[0083]** A hydraulic pump assembly 518 is also coupled to engine 502 and is driven by the crankshaft of engine 502. As described herein, hydraulic pump assembly 518 is operative to drive hydraulic motor 552 of steering and drive assembly 508 to facilitate zero-speed turning and low-speed turning of vehicle 10. In one embodiment, hydraulic pump assembly 518 includes a dual hydraulic pump in a dual stage configu-ration, i.e., a pair of hydraulic pumps

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		coupled in a series relationship (see FIG. 18, for example). Hydraulic lines are routed from hydraulic pump assembly 518 to hydraulic motor 552 of steering and drive assembly 508. In one embodiment, hydraulic pump assembly 518 drives other hydraulic components of vehicle 10. **[0084]** In operation, to drive vehicle 10 straight forward, steering and drive assembly 508 applies power from engine 502 to both drive units 590, 592 (FIG. 16) such that both left and right tracks 12, 14 rotate at the same speed. To steer the vehicle 10 based on the steering angle of steering wheel 529 (FIG. 8), steering and drive assembly 508 applies a differential to the driving speeds of each drive unit 590, 592 (FIG. 16). The speed difference between the left and right drive units 590, 592 is different depending on the desired corner radius that vehicle 10 is driven. **[0085]** In one embodiment, the differential speed of the two driving units 590, 592 is achieved by a controlled variation of the drive ratio between the two driving units 590, 592, and not by applying brakes 536. As such, the distribution of the torque applied to drive units 590, 592 is adjusted without changing the total torque applied. The torque reduced on the one side of vehicle 10 is applied to the other side of vehicle 10. Based on this behavior, the vehicle 10 keeps a constant driving speed during steering. In an alternative embodiment, brakes 536 are actuated to assist with steering vehicle 10.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		[0090] In one embodiment, to keep a constant velocity of vehicle 10 during a turning operation, the outer side drive axle 534 (relative to the turning direction) is faster than a neutral vehicle (i.e., the requested speed of the vehicle 10), and the inner side drive axle 534 is driven the same amount slower than the neutral vehicle speed. In the illustrated embodiment, intermediate shaft 572 of steering gear assembly 562 is operative to invert the rotational direction of the ring gear 568 of planetary gear assembly 564 relative to the rotational direction of ring gear 568 of planetary gear assembly 566. As such, the steering input provided with hydraulic motor 552 causes one drive axle 534 to drive faster and one drive axle 534 to drive slower relative to the neutral vehicle speed to provide the turning effect. **[0092]** Referring to FIG. 18, an exemplary hydraulic steering system 600 is illustrated. Engine 502 drives a first hydraulic pump 602 and a second hydraulic pump 604 of hydraulic pump assembly 518. A control valve 606, 608 is coupled at the output of each pump 602, 604, respectively. Gearbox 510 drives drive shaft 506 to drive hydraulic pump 550 of steering and drive assembly 508, and a control valve 610 is coupled at the output of pump 550. The hydraulic components of FIG. 18 are coupled together view hydraulic hoses or lines as illustrated. Exemplary pump displacements, pressure values, pump speeds, and other values are shown in FIG. 18 to illustrate an example embodiment of hydraulic steering system 600, and other suitable values and specifications may be provided depending on system configuration.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
18. The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit.	**[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. **[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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 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. **[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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).	
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.	**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 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.	**[0059]** The inverted "U" shape of bottom wall 45 is designed to direct any water in tub 40 toward perimeter 47 of bottom wall 45. As shown in FIG. 19, vehicle 10 may include a plurality of pumps, for example bilge pumps 630, positioned around perimeter 47 of tub 40 in order to evacuate any water from tub 40. In one embodiment, vehicle 10 may include four pumps 630 coupled to bottom wall 45 at perimeter 47 (i.e., adjacent side walls 48) of tub 40. Pumps 630 may be configured for automatic operation upon the detection of water in tub 40 and/or may be manually operated. Vehicle 10 also may be configured to support a jet pump and/or propeller member to assist with amphibious operation, as detailed further herein. **[0079]** As illustrated in FIG. 14, gearbox 510 drives an attachment shaft 511 for transferring engine torque to an attachment or implement (e.g., a work tool) attached to vehicle 10. Attachment shaft 511 illustratively extends outwardly from a backside of gearbox 510 opposite drive shaft 506 and towards the back of vehicle 10 (e.g., through an aperture of the tub) for attaching the external implement. In one embodiment, attachment shaft 511 provides a power take-off for driving the implement with engine 502.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	[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 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	In one embodiment, gearbox 510 selectively engages attachment shaft 511 based on an operator input. For example, the shift lever may be actuated to engage attachment shaft 511 to power the implement coupled to vehicle 10. In one embodiment, a clutch assembly is selectively engaged by the operator to engage attachment shaft 511 via gearbox 510. The clutch assembly may be hydraulically or electronically operated. In one embodiment, attachment shaft 511 is used to drive a jet pump and/or propeller member to assist in propelling vehicle in water during amphibious operation.

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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 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.	
20. The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly	**[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
connected to the fluid pump.	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. **[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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). **[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	

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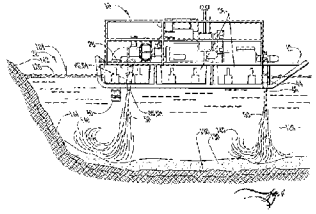
Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	manipulating the direction of the slurry outputs (44), (62) and (64) with the remote control system (84), a user may direct the agitator (10) to any desired portion of the lagoon. **[0037]** The remote control system (84) may be used to cause the slurry 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 4:**  **Figure 6:**	

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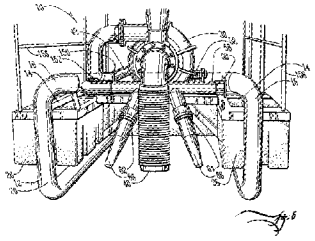
Claim	Puck (2014/0112093)	Bennett (2014/0288763)
		
21. The vehicle of claim 20, wherein the wireless remote control is configured to control the plurality of fluid nozzles to control the at least one of speed and direction of the vehicle when the vehicle is floating.	**Abstract:** A floating manure 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 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.	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	[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. **[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	

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Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	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 (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. **[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	

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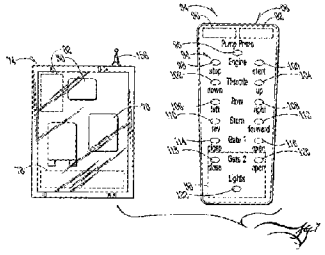
Claim	Puck (2014/0112093)	Bennett (2014/0288763)
	used to direct the agitator (10) to all desired portions of the lagoon until the crust (126) and supernatant (128) is adequately mixed with the sludge (130). **Figure 7:**  **Claim 2:** The floating slurry agitator of claim 1, further comprising a wireless remote control coupled to the steering control. **Claim 15:** The liquid manure agitator of claim 14, further comprising a wireless remote control coupled to the steering control.	

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EXHIBIT I

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Wisconsin on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
21-CV-1322-BHL	11/16/2021	Eastern District of Wisconsin

PLAINTIFF	DEFENDANT
Nuhn Industries, Ltd.	Bazooka Farmstar, LLC and Tach's Custom, LLC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	9,694,636 B2	7/4/2017	Nuhn Industries, Ltd.
2	10,974,557 B2	4/13/2021	Nuhn Industries, Ltd.
3			
4			
5			

In the above---entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above---entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Gina Colletti	s/K. Hubacz	11/18/2021

Copy 1---Upon initiation of action, mail this copy to Director Copy 3---Upon termination of action, mail this copy to Director
Copy 2---Upon filing document adding patent(s), mail this copy to Director Copy 4---Case file copy

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/891,627	04/13/2021	10974557	NUN-0007-US4	3433

59115 7590 03/24/2021

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

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 Data Management (ODM) at (571)-272-4200.

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

Ian NUHN, Sebringville, CANADA;
Nuhn Industries Ltd., Sebringville, CANADA;

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 USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

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

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
16891627	03-Jun-2020	Ian NUHN	NUN-0007-US4	3433

TITLE OF INVENTION :

AMPHIBIOUS PUMPING VEHICLE

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

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$600	$0	$600	10-May-2021	$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**	03-15-2021
Name	Robert A.H. Brunet	**Registration Number**	55158

Electronic Patent Application Fee Transmittal

Application Number:	16891627
Filing Date:	03-Jun-2020
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-US4

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:	42177945
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	15-MAR-2021
Filing Date:	03-JUN-2020
Time Stamp:	12:22:53
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	E20213EC22492945
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	46171 7322f4ebc70a5991777269afb3f272221779cc28	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	32037 0a6671fd7a3950e17ff455fcd8f63c1d5774c566	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	78208		

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.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
16/891,627	06/03/2020	3617	835	NUN-0007-US4	20	1

CONFIRMATION NO. 3433
CORRECTED FILING RECEIPT

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

OC000000123945336

Date Mailed: 03/10/2021

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 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

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: 06/10/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/891,627**

Projected Publication Date: Not Applicable

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.

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

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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NOTICE OF ALLOWANCE AND FEE(S) DUE

59115 7590 02/10/2021

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

EXAMINER
AVILA, STEPHEN P

ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 02/10/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4	3433

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	05/10/2021

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 and an extra copy of the form should be submitted. 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 02/10/2021

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.
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4	3433

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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	05/10/2021

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/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 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.
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4	3433

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EXAMINER	
AVILA, STEPHEN P	
ART UNIT	PAPER NUMBER
3617	

DATE MAILED: 02/10/2021

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. 16/891,627	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 interview of 1/28/21.
   ☐ 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 See Continuation Sheet . 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. 012821.
5. ☑ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/STEPHEN P AVILA/
Primary Examiner, Art Unit 3617

Continuation of 3. The allowed claim(s) is/are: 1-2,4,6,12,18,20 and 29-34

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.

2. **EXAMINER'S AMENDMENT**

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Mr. Brunet on 1/28/21.

The application has been amended as follows:

Claims 21-28 have been canceled.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: The response filed 1/26/21, including the amendment to the specification and ADS, aligns the specification to the ADS.

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 on 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 an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, 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

Applicant-Initiated Interview Summary	**Application No.** 16/891,627	**Applicant(s)** NUHN, Ian		
	Examiner STEPHEN AVILA	**Art Unit** 3617	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
STEPHEN AVILA	Primary Examiner	Telephonic
Mr. Brunet	Attorney of Record	

Date of Interview: 28 January 2021

Issues Discussed:

35 U.S.C. 103

Claims 21-28 to be canceled via examiners amendment.

Other

The ADS and specification

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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)	13	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	02 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20210202

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 694 of 1211

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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 (Assistant Examiner)	(Date)	Total Claims Allowed: 13	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617 (Primary Examiner)	02 February 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office

Part of Paper No.: 20210202

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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		28								
	2		11		20		29								
	3		12		21		30								
	4		13		22		31								
	5		14		23		32								
	6		15		24		33								
	7		16		25		34								
	8		17		26										
	9		18		27										

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	13	
/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	02 February 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20210202

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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	09/09/2020	01/21/2021	02/02/2021						
	1	✓	=	=						
	2	✓	=	=						
	3	✓	-	-						
	4	✓	=	=						
	5	✓	-	-						
	6	✓	=	=						
	7	✓	-	-						
	8	✓	-	-						
	9	✓	-	-						
	10	✓	-	-						
	11	✓	-	-						
	12	✓	=	=						
	13	✓	-	-						
	14	✓	-	-						
	15	✓	-	-						
	16	✓	-	-						
	17	✓	-	-						
	18	✓	=	=						
	19	✓	-	-						
	20	✓	=	=						
	21		✓	-						
	22		✓	-						
	23		✓	-						
	24		✓	-						
	25		✓	-						
	26		✓	-						
	27		✓	-						
	28		✓	-						
	29		=	=						
	30		=	=						
	31		=	=						
	32		=	=						
	33		=	=						
	34		=	=						

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	NUHN, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

CPC - Searched*		
Symbol	Date	Examiner
B60F 3/00,0061,0007,003,0038	09/09/2020	/sa/
B60F 3/00,0061,0038,003,0007	01/19/2021	/sa/
B60F 3/00,0061,003,0038,0007	02/02/2021	/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
east, see search history	09/09/2020	/sa/
checked all parent applications	09/09/2020	/sa/
east interference, see search history	01/19/2021	/sa/
east, see search history	01/19/2021	/sa/
east interference, see search history	02/02/2021	/sa/

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 698 of 1211

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	NUHN, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
B60F	3/00,0038,0061,003,0007	01/19/2021	/sa/
B60F	3/00,0061,0003,0038,0007	02/02/2021	/sa/

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 699 of 1211

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4,603	B60F3/00,0061,0007,003,0038.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2021/02/02 04:30

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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2/2/2021 4:40:34 AM
C:\Users\savila\Documents\EAST\Workspaces\16303907.wsp

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4	3433

59115 7590 02/01/2021

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
02/01/2021	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

Office Action Summary	Application No. 16/891,627	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 --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 1/14/21.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☑ This action is **FINAL.** 2b) ☐ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance 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.

Disposition of Claims*

5) ☑ Claim(s) 1-2,4,6,12,18 and 20-34 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☑ Claim(s) 1-2,4,6,12,18,20 and 29-34 is/are allowed.

7) ☑ Claim(s) 21-28 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☑ Interview Summary (PTO-413) Paper No(s)/Mail Date 011921.

4) ☐ Other: _____.

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.

2. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 21-28 is/are rejected under 35 U.S.C. 103 as being unpatentable over Royle (US 5176098; cited by Applicant) in view of Remley (US 3384047; cited by Applicant) Puck et al (US 2014/0112093; cited by Applicant) and Bennett (US 2014/0288763). Royle discloses the basic claimed structure including an amphibious vehicle 10 with a floatable body 12, ground engaging propulsion structure (including 11, 13) to configured to raise and lower relative to the vehicle body and a power source (Y) for an outboard motor (column 2, lines 10-20, for example) for water propulsion and to drive the wheels 13 for land propulsion. Not disclosed by Royle is a fluid nozzle to direct fluid through the air, a conduit and a pump and multiple nozzles for steering and propulsion. Remley teaches a device with a floatable body 10, a fluid pump 16, a conduit 19 and a fluid nozzle 13 configured to direct fluid through the air. Puck teaches multiple nozzles for steering and propulsion with a valve and a remote control system 84. Bennett teaches a remote control for land and water (paragraphs 0043, 0121). 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 and to use the remote control on land and water as taught by Bennett for ease of use. With respect to claims 2 and 3, note Royle Figure 2. With respect to claims 7

and 10, note Remley, pump 16. With respect to claim 8, note Figure 3 of Royle. With respect to claims 12-13, 16-17 note Puck, Figure 4. With respect to claim 18, the center of gravity is inherent in the combination. With respect to claims 19-20, note 84 of Puck. The combination combines known features to achieve predictable results.

4. Claims 1-2, 4, 6, 12, 18, 20 and 29-34 are allowed.

5. It is noted that the first page of the specification and the ADS form filed 1/26/21 do not correspond for the filing date of PCT/CA2014/050789. The ADS filed 1/26/21 lists the filing date as 2014-08-18 and the specification lists the filing date as August 19, 2014. It is required that either the specification is amended or a new ADS be filed so that the correct filing date corresponds.

6. Applicant's arguments with respect to claim(s) 21-28 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. 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 on 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 an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, 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

Examiner-Initiated Interview Summary	**Application No.** 16/891,627	**Applicant(s)** NUHN, Ian		
	Examiner STEPHEN AVILA	**Art Unit** 3617	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
STEPHEN AVILA	Primary Examiner	Telephonic
Mr. Brunet	Attorney of Record	

Date of Interview: 19 January 2021

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.

Objections

The examiner also requested a new ADS to correspond to the specification details, however, the ADS filed 1/26/21 still does not correspond.

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: It is not necessary for applicant to provide a separate record of the substance of interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Notice of References Cited	Application/Control No. 16/891,627	Applicant(s)/Patent Under Reexamination NUHN, Ian	
	Examiner STEPHEN AVILA	Art Unit 3617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20140288763-A1	09-2014	Bennett; Jeffrey D.	B62D11/18	701/31.6
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	NUHN, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

CPC - Searched*		
Symbol	Date	Examiner
B60F 3/00,0061,0007,003,0038	09/09/2020	/sa/
B60F 3/00,0061,0038,003,0007	01/19/2021	/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
east, see search history	09/09/2020	/sa/
checked all parent applications	09/09/2020	/sa/
east interference, see search history	01/19/2021	/sa/
east, see search history	01/19/2021	/sa/

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
B60F	3/00,0038,0061,003,0007	01/19/2021	/sa/

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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	09/09/2020	01/21/2021							
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	2	✓	=							
	3	✓	-							
	4	✓	=							
	5	✓	-							
	6	✓	=							
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	29		=							
	30		=							
	31		=							
	32		=							
	33		=							
	34		=							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
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EAST Search History (Interference)

<This search history is empty>

1/19/2021 2:42:59 PM
C:\Users\savila\Documents\EAST\Workspaces\0000.wsp

EAST Search History

EAST Search History (Prior Art)

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EAST Search History (Interference)

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1/19/2021 1:51:24 PM
C:\Users\savila\Documents\EAST\Workspaces\0000.wsp

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-US4
	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	CA

Mailing Address of Inventor:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Postal Code	N0K 1X0	**Country**	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-US4	**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-US4
	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)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	59115		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16157950	2018-10-11

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	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)
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	~~2014-08-18~~ 2016-02-16	9694636	2017-07-04
Prior Application Status	~~Pending~~ Expired				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
15044905	Continuation of	PCTCA2014050789	2014-08-18		
Prior Application Status	Expired				Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
PCTCA2014050789	Claims benefit of provisional	61867598	2013-08-19		

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

☐ 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.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (02-18)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Applicant Information:

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

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.

Mailing Address Information For Applicant:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country	CA	Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

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.

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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Nuhn Industries Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country	CA	Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Robert A. H. Brunet/			Date (YYYY-MM-DD)	2020-06-03
First Name	Robert	Last Name	Brunet	Registration Number	55158

Additional Signature may be generated within this form by selecting the Add button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 records.

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 CooperationTreaty.

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 Acknowledgement Receipt

EFS ID:	41747440
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	26-JAN-2021
Filing Date:	03-JUN-2020
Time Stamp:	14:58:25
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	Supplemental Response or Supplemental Amendment	2021-01-26-SupplementalAmendment.pdf	63524 cdb5a99f4a5d38a6d08443488252e009af2c0263	no	3

Warnings:

Information:					
2	Application Data Sheet	2021-01-26-ADS-Corrected2.pdf	176718 c991074540074be3639a52713906b22f8522a2b0	no	9
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
			Total Files Size (in bytes):	240242	

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	16/891,627	Confirmation No. 3433
Applicant	:	Ian Nuhn	
Filed	:	06/03/2020	
TC/A.U.	:	3617	
Examiner	:	Stephen P Avila	
Docket No.	:	NUN-0007-US4	
Customer No.	:	59115	

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

SUPPLEMENTAL AMENDMENT & CORRECTED ADS

Sir:

Supplemental to the response filed January 14, 2021, please consider the following amendment. Please amend the application as follows:

Amendments to the Specification begin on page **2** of this paper.

Remarks/Arguments begin on page **3** of this paper.

Amendments to the Specification:

Please replace paragraph [0001] on page 1 with the following:

[0001] This application 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 [[~~19~~]]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.

REMARKS/ARGUMENTS

The Cross-reference to Related Applications paragraph on page 1 of the specification has been updated to mention the issue number and date of USSN 16/157,950 and to correct the filing date of the original parent PCT application.

In addition, errors were noted in the ADS in the filing date of USSN 15/044,905 and the status of the original parent PCT application. Applicant submits herewith a corrected ADS.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
BRUNET & CO. LTD.

/Robert A.H. Brunet/

Date: January 26, 2021

Robert A.H. Brunet
Reg. No. 55,158
Tel.: (519) 474-0700

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 725 of 1211

PTO/SB/06 (09-11)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/891,627	Filing Date 06/03/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	01/26/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/RENEE M COLLINS/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 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/SB/06 (09-11)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/891,627	Filing Date 06/03/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	01/26/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 21	= 0		x $100 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/RENEE M COLLINS/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 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.

Electronic Patent Application Fee Transmittal

Application Number:	16891627
Filing Date:	03-Jun-2020
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian NUHN
Filer:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US4

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:				
Extension - 1 month with $0 paid	2251	1	110	110
Miscellaneous:				
		Total in USD ($)		**160**

Electronic Acknowledgement Receipt

EFS ID:	41653822
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	14-JAN-2021
Filing Date:	03-JUN-2020
Time Stamp:	23:03:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$160
RAM confirmation Number	E20211DN05027142
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	Extension of Time	2021-01-14-PetitionExtensionTime.pdf	148341 307ef63bdf1cc54dbc6bd88d7db9805a1e8488e1	no	1
Warnings:					
Information:					
2	Internet Communications Authorized	2021-01-14-AuthorizeInternetCommunication.pdf	56380 39c6680fdee432c0893eeea513addb0268acad13	no	1
Warnings:					
Information:					
3	First Action Interview - Schedule Interview request	2021-01-14-InterviewRequest.pdf	396131 deffd56fa2e5916ae07f1d34f3bc4753ecd4d890	no	1
Warnings:					
Information:					
4	Amendment/Req. Reconsideration-After Non-Final Reject	2021-01-14-ResponseOA1.pdf	38099 730a11da29d0c990ceaf9c8a538565c4f3e7f4b9	no	9
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32371 ce262cafdf45b8517e5808309d077db921518333	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	671322		

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/22 (10-20)
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 displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)

Docket Number (Optional): NUN-0007-US4

Application Number: 16/891,627

Filed: 06/03/2020

For: AMPHIBIOUS PUMPING VEHICLE

Art Unit: 3617

Examiner: Stephen P Avila

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

		Fee	Small Entity Fee	Micro Entity Fee	
☑	One month (37 CFR 1.17(a)(1))	$220	$110	$55	$ 110
☐	Two months (37 CFR 1.17(a)(2))	$640	$320	$160	$
☐	Three months (37 CFR 1.17(a)(3))	$1,480	$740	$370	$
☐	Four months (37 CFR 1.17(a)(4))	$2,320	$1,160	$580	$
☐	Five months (37 CFR 1.17(a)(5))	$3,160	$1,580	$790	$

☐ Applicant asserts small entity status. See 37 CFR 1.27.

☐ Applicant certifies micro entity status. See 37 CFR 1.29.
Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☐ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number _____.

☑ Payment made via EFS-Web.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 55,158.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Robert A.H. Brunet/ — Signature

January 14, 2021 — Date

Robert A.H. Brunet — Typed or printed name

(519) 474-0700 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). 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 6 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: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Doc Code: ECOMM.AUTH/ECOMM.WTDW
Doc Description: Internet Communications Authorized/Internet Communications Authorization Withdrawn

PTO/SB/439 (11-15)

AUTHORIZATION FOR INTERNET COMMUNICATIONS IN A PATENT APPLICATION OR REQUEST TO WITHDRAW AUTHORIZATION FOR INTERNET COMMUNICATIONS		
	Application No.	16/891,627
	Filing Date	06/03/2020
	First Named Inventor	Ian Nuhn
	Art Unit	3617
	Examiner Name	Stephen P Avila
	Practitioner Docket No.	NUN-0007-US4

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I. To authorize permission for Internet Communications.

☑ Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with the undersigned and practitioners in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via video conferencing, instant messaging, or electronic mail. I understand that a copy of these communications will be made of record in the application file. (MPEP 502.03)

II. To withdraw authorization for Internet Communications.

☐ The authorization given on _____, to the USPTO to communicate with the undersigned and any practitioner in accordance with 37 CFR 1.33 and 37 CFR 1.34 concerning any subject matter of this application via Internet communications such as video conferencing, instant messaging, or electronic mail is hereby withdrawn. I understand that the withdrawal is effective when approved rather than when received.

I am the

☐ applicant.

☑ attorney or agent of record. Registration number 55,158.

☐ attorney or agent acting under 37 CFR 1.34. Registration number _____.

/Robert A.H. Brunet/ — Signature

January 14, 2021 — Date

Robert A.H. Brunet — Typed or printed name

(519) 474-0700 — Telephone Number

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Juristic entities must be represented by a patent practitioner (see 37 CFR 1.31, which is applicable to any paper filed on or after September 16, 2012, that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below*.

☐ * Total of _____ forms are submitted.

PTOL-413A (07-16)
Approved for use through 12/31/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Applicant Initiated Interview Request Form

Application No.: 16/891,627 First Named Applicant: Ian Nuhn
Examiner: Stephen P Avila Art Unit: _____ Status of Application: 1st office action

Tentative Participants:
(1) Robert Brunet **(2)** Stephen Avila
(3) _____ **(4)** _____

Proposed Date of Interview: _____ **Proposed Time:** _____ **(◎AM◎PM)**

Type of Interview Requested:
(1) ☑ **Telephonic** **(2)** ☐ **Personal** **(3)** ☐ **Video Conference**

Exhibit To Be Shown or Demonstrated: ☐ **YES** ☑ **NO**
If yes, provide brief description: _____

Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) all pending	all pending	of record	☐	☐	☐
(2)			☐	☐	☐
(3)			☐	☐	☐
(4)			☐	☐	☐

☐ Continuation Sheet Attached ☑ Proposed Amendment or Arguments Attached
Brief Description of Arguments to be Presented: as set out in Office Action response dated January 14, 2021.

An interview was conducted on the above-identified application on _____

NOTE: This form should be completed and filed by applicant in advance of the interview (see MPEP § 713.01). If this form is signed by a registered practitioner not of record, the Office will accept this as an indication that he or she is authorized to conduct an interview on behalf of the principal (37 CFR 1.32(a)(3)) pursuant to 37 CFR 1.34. This is not a power of attorney to any above named practitioner. See the Instruction Sheet for this form, which is incorporated by reference. By signing this form, applicant or practitioner is certifying that he or she has read the Instruction Sheet. After the interview is conducted, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible. This application will not be delayed from issue because of applicant's failure to submit a written record of this interview.

/Robert A.H. Brunet/
Applicant/Applicant's Representative Signature

Examiner/SPE Signature

Robert A.H. Brunet
Typed/Printed Name of Applicant or Representative

(519) 474-0700
Applicant's/Applicant's Representative's Telephone Number

55,158
Registration Number, if applicable

This collection of information is required by 37 CFR 1.133. 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 24 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.

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

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT**
Application Number	16891627
Filing Date	03-Jun-2020
First Named Inventor	Ian NUHN
Attorney Docket Number	NUN-0007-US4
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) 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)

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.

Applicant 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 Brunet/
Name	Robert 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:	16891627
Filing Date:	03-Jun-2020
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian NUHN
Filer:	Robert A.H. Brunet
Attorney Docket Number:	NUN-0007-US4

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.: 16891627

Filing Date: 03-Jun-2020

Applicant/Patent under Reexamination: NUHN

Electronic Terminal Disclaimer filed on January 14, 2021

☒ 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:	41653842
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	14-JAN-2021
Filing Date:	03-JUN-2020
Time Stamp:	23:14:29
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	E20211DN14257190
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	33807 c48f561f8d64d1d24a04b3368de52300b0f4f5ec	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30246 338d626663cf78a0e970dae72b82285074fd2ba2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	64053		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	:	16/891,627	Confirmation No. 3433
Applicant	:	Ian Nuhn	
Filed	:	06/03/2020	
TC/A.U.	:	3617	
Examiner	:	Stephen P Avila	
Docket No.	:	NUN-0007-US4	
Customer No.	:	59115	

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

AMENDMENT/RESPONSE

Sir:

In response to the Office action of September 14, 2020, please consider the following amendment/response. Please amend the application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page **2** of this paper.

Remarks/Arguments begin on page **7** of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An amphibious ~~pumping~~ vehicle comprising:

a floatable vehicle body;

ground engaging propulsion structure;

a fluid pump for pumping liquid manure;

~~a first~~at least one fluid nozzle connected by a fluid conduit to the fluid pump; ~~and,~~

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 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.

2. (Original) The vehicle according to claim 1, wherein the ground engaging propulsion structure comprises a set of wheels or an endless track.

3. (Cancelled)

4. (Original) 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.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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5. (Cancelled)

6. (Original) The vehicle according to claim 4, wherein the ground engaging propulsion structure is operable at variable speed by a hydraulic motor.

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Currently amended) The vehicle according to claim 1, wherein the ~~vehicle~~ at least one fluid nozzle comprises a plurality of fluid nozzles ~~comprising the first fluid nozzle and at least one second fluid nozzle~~ connected to the fluid conduit.

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Original) 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.

19. (Cancelled)

20. (Currently Amended) The vehicle according to claim [[~~19~~]]1, wherein the amount of fluid flow from the ~~first~~ at least one fluid nozzle and/or the direction of the ~~first~~ at least one fluid nozzle are remotely controllable by ~~an~~ the operator remote from the vehicle when the vehicle is floating.

21. (New) 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 hydraulically powered fluid mover for moving 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 mover; and,

remote control structure configured to control the ground engaging propulsion structure and the fluid mover, 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.

22. (New) The vehicle according to claim 21, wherein the ground engaging propulsion structure comprises a set of wheels or an endless track.

23. (New) The vehicle according to claim 21, wherein the power source is configured to provide hydraulic fluid power to both the ground engaging propulsion structure and the fluid mover.

24. (New) The vehicle according to claim 23, wherein the ground engaging propulsion structure is operable at variable speed by a hydraulic motor.

25. (New) The vehicle according to claim 21, wherein the vehicle comprises at least one fluid nozzle connected to a fluid conduit.

26. (New) The vehicle according to claim 25, wherein the at least one fluid nozzle comprises a plurality of fluid nozzles connected to the fluid conduit.

27. (New) The vehicle according to claim 25, 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.

28. (New) The vehicle according to claim 21, 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.

29. (New) An amphibious vehicle comprising:

a floatable vehicle body;

four hydraulically powered ground engaging wheels;

four hydraulic motors, one hydraulic motor per wheel, for powering the four hydraulically powered ground engaging wheels;

a fluid pump for pumping liquid manure;

at least one directionally adjustable nozzle through which the liquid manure is pumped;

an internal combustion engine configured to provide power to both the four variable speed hydraulic motors and the fluid pump;

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; 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.

30. (New) The vehicle according to claim 29, wherein the power source is configured to provide hydraulic fluid power to the four hydraulic motors and the fluid pump.

31. (New) The vehicle according to claim 30, 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.

32. (New) The vehicle according to claim 29, wherein the at least one directionally adjustable nozzle is connected to a fluid conduit connected to the fluid pump.

33. (New) The vehicle according to claim 32, wherein a plurality of nozzles comprising the at least one directionally adjustable nozzle is connected to the fluid conduit.

34. (New) The vehicle according to claim 29, 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.

REMARKS/ARGUMENTS

A Petition for Extension of time and the appropriate fee have been filed along with this response. Applicant submits that the response is timely filed.

Claims

Claims 3, 5, 7-11, 13-17 and 19 are cancelled without prejudice.

Claim 1 is amended for improved clarity and to include a remote control structure as supported in claim 19 and at paragraph 0015, for example.

Claims 12 and 20 are amended for consistency with amended claim 1 and to update the dependency of claim 20 in view of cancellation of claim 19.

New independent claim 21 is added, which finds support, for example, in claims 1, 19 and in paragraphs 0007, 0009, 0015 of the specification.

New dependent claim 22 is based on claim 2.

New dependent claim 23 is based on claim 4.

New dependent claim 24 is based on claim 6.

New dependent claim 25 is supported, for example, by claim 1.

New dependent claim 26 is supported, for example, by claim 12.

New claim 27 is based on claim 20.

New claim 28 is based on claim 18.

New independent claim 29 is added, which finds support, for example, in claims 1, 18, 19 and in paragraphs 0007, 0009, 0015 of the specification.

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 749 of 1211

New dependent claim 30 is supported, for example, by claim 4.

New dependent claim 31 is supported, for example, by claim 6.

New dependent claim 32 is supported, for example, by claim 1.

New dependent claim 33 is supported, for example, by claim 12.

New dependent claim 34 is supported, for example, by claim 20.

Applicant submits that no new matter is entered by way of these amendments.

Claim Rejections – 35 USC § 103

Claims 1-3, 7-8, 10, 12-13 and 16-20 were rejected for being unpatentable over US 5,176,098 (Royle) in view of U.S. 3,384,047 (Remley) and Puck (US 2014/0112093).

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.

Double Patenting

Claims 1-20 have been rejected as being unpatentable over claims 1-21 of Applicant's issued US patent 9,694,636 and claims 1-20 of issued US patent 10,124,638 on the grounds of non-statutory double patenting.

Claims 1-20 have also been rejected as being unpatentable over claims 1-20 of Applicant's issued US patent 10,710,422 in view of Puck (US 2013/0145980).

An e-terminal disclaimer over US patent 9,694,636, US patent 10,124,638 and US patent 10,710,422 has been filed together with the appropriate fee.

Applicant has submitted an Interview Request form. In the event that any matters remain to be resolved in view of this communication, the Examiner is encouraged to call the undersigned so that a prompt disposition of this application can be achieved.

Conclusion

Applicant respectfully requests that all the rejections be withdrawn. In view of the above amendment and remarks, reconsideration on all claims is respectfully requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,
BRUNET & CO. LTD.

/Robert A.H. Brunet/

Date: January 14, 2021

Robert A.H. Brunet
Reg. No. 55,158
Tel.: (519) 474-0700

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 751 of 1211

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. 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 displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 16/891,627	Filing Date 06/03/2020	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		x $100 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $460 =	
☐ 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).				
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	01/14/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 21	Minus	** 20	= 1		x $100 =	100
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $480 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	100

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=		x $0 =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=		x $0 =	
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/DANTE SMITH/
*** 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 number found in the appropriate box in column 1.	

This collection of information is required by 37 CFR 1.16. 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 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.

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
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4

CONFIRMATION NO. 3433

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

PUBLICATION NOTICE

OC000000119967501

Title:AMPHIBIOUS PUMPING VEHICLE

Publication No.US-2020-0290415-A1
Publication Date:09/17/2020

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.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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.
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4	3433

59115 7590 09/14/2020

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
09/14/2020	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

Office Action Summary	Application No. 16/891,627	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 --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 6/3/20.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ 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.

4)☐ Since this application is in condition for allowance 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.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, 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.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 6/3/20 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

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.

2. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 7-8, 10, 12-13 and 16-20 is/are rejected under 35 U.S.C. 103 as being unpatentable over Royle (US 5176098; cited by Applicant) in view of Remley (US 3384047; cited by Applicant) and Puck (US 2014/0112093; cited by Applicant). Royle discloses the basic claimed structure including an amphibious vehicle 10 with a floatable body 12, ground engaging propulsion structure (including 11, 13) to configured to raise and lower relative to the vehicle body and a power source (Y) for an outboard motor (column 2, lines 10-20, for example) for water propulsion and to drive the wheels 13 for land propulsion. Not disclosed by Royle is a fluid nozzle to direct fluid through the air, a conduit and a pump and multiple nozzles for steering and propulsion. Remley teaches a device with a floatable body 10, a fluid pump 16, a conduit 19 and a fluid nozzle 13 configured to direct fluid through the air. Puck teaches multiple nozzles for steering and propulsion with a valve and a remote control system 84. 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. With respect to claims 2 and 3, note Royle Figure 2. With respect to claims 7 and 10, note Remley, pump 16. With respect to claim 8, note Figure 3 of Royle. With respect to claims 12-13, 16-17 note Puck, Figure 4. With respect to claim 18, the center of

gravity is inherent in the combination. With respect to claims 19-20, note 84 of Puck. The combination combines known features to achieve predictable results.

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal

Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

5. Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 9694636 and claims 1-20 of U.S. Patent No. 10124638. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims are encompassed by the previous claims and any further differences in the claims would have been obvious to a person of ordinary skill in the art for improved efficiency.

6. Claims 1-20 are further rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 10710422 in view of Puck (US 2013/0145980; cited by Applicant). Not disclosed by the claims of 10710422 is a hydraulic pump. Puck teaches a hydraulic pump 84. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the device of the claims of 10710422 with a hydraulic pump as taught by Puck for improved efficiency. The combination combines known features to achieve predictable results.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gazda (US 2586218) shows a track (Figure 4).

8. 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 on 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 an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see https://ppair-my.uspto.gov/pair/PrivatePair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, 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

Notice of References Cited	Application/Control No. 16/891,627	Applicant(s)/Patent Under Reexamination NUHN, Ian	
	Examiner STEPHEN AVILA	Art Unit 3617	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-9694636-B2	07-2017	Nuhn; Ian	A01C3/026	1/1
*	B	US-10124638-B2	11-2018	Nuhn; Ian	A01C23/045	1/1
*	C	US-10710422-B2	07-2020	Nuhn; Ian	A01C3/026	1/1
*	D	US-2586218-A	02-1952	ANTOINE GAZDA	B60F3/0015	440/95
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	NUHN, Ian
	Examiner	Art Unit
	STEPHEN AVILA	3617

CPC - Searched*		
Symbol	Date	Examiner
B60F 3/00,0061,0007,003,0038	09/09/2020	/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
east, see search history	09/09/2020	/sa/
checked all parent applications	09/09/2020	/sa/

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

/STEPHEN P AVILA/ Primary Examiner, Art Unit 3617	

Exhibit 2021
Bazooka v. Nuhn - IPR2024-00098
Page 761 of 1211

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	16/891,627	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	09/09/2020								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
	8	✓								
	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								
	20	✓								

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 762 of 1211

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4,500	B60F3/00,0061,0007,003,0038.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/09/09 07:58
L2	4	("20100144220" | "20130145980" | "20140112093" | "20150258868").PN.	US-PGPUB; USPAT	OR	OFF	2020/09/09 08:05
L3	3	(("9694636") or ("10124638") or ("10710422")).PN.	USPAT	OR	OFF	2020/09/09 08:21
L4	2,775,203	hydraulic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/09/09 08:23
L5	3	2 and 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/09/09 08:23
L6	10	(("5176098") or ("3384047")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2020/09/09 08:56
L7	1,121	B60F3/00,0061,0007,003,0038.cpc.	US-PGPUB; USPAT; USOCR	OR	OFF	2020/09/09 08:59
L8	1,561,354	track	US-PGPUB; USPAT; USOCR	OR	OFF	2020/09/09 08:59
L9	1,685,118	track or tracked	US-PGPUB; USPAT; USOCR	OR	OFF	2020/09/09 09:00

L10	363	7 and 9	US-PGPUB; USPAT; USOCR	OR	OFF	2020/09/09 09:00
L11	2,232,965	remote	US-PGPUB; USPAT	OR	OFF	2020/09/09 09:07
L12	3	2 and 11	US-PGPUB; USPAT	OR	OFF	2020/09/09 09:07

EAST Search History (Interference)

<This search history is empty>

9/9/2020 9:16:32 AM
C:\Users\savila\Documents\EAST\Workspaces\16911809.wsp

Bibliographic Data

Application No: 16/891,627

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.
06/03/2020	440	3617	NUN-0007-US4
RULE			

APPLICANTS

Nuhn Industries Ltd., Sebringville, CANADA

INVENTORS

Ian NUHN, Sebringville, CANADA

CONTINUING DATA

This application 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

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

06/10/2020

**** SMALL ENTITY ****

STATE OR COUNTRY

CANADA

ADDRESS

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

FILING FEE RECEIVED

$785

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	16891627
Filing Date	2020-06-03
First Named Inventor	NUHN, Ian
Art Unit	
Examiner Name	
Attorney Docket Number	NUN-0007-US4

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	

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	

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

	2	20140112093	A1	2014-04-24	Puck	
	3	20100144220	A1	2010-06-10	Bailey	
	4	20150258868	A1	2015-09-17	Visscher	

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

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]

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

	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.	☒
	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.	☐

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	09/09/2020

*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	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

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)	2020-06-10
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.B/

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 reques 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 2031
Bazooka v. Nuhn - IPR2024-00098

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

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 16/891,627

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	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 230 =	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	785		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
16/891,627	06/03/2020	3746	785	NUN-0007-US4	20	1

CONFIRMATION NO. 3433

FILING RECEIPT

OC000000117659245

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

Date Mailed: 06/12/2020

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 16/157,950 10/11/2018
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 *
(*)Data provided by applicant is not consistent with PTO records.

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: 06/10/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/891,627**

Projected Publication Date: 09/17/2020

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

AMPHIBIOUS PUMPING VEHICLE

Preliminary Class

417

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.

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

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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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).

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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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Bazooka v. Nuhn - IPR2024-00098
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/891,627	06/03/2020	Ian NUHN	NUN-0007-US4

CONFIRMATION NO. 3433

IMPROPER CFR REQUEST

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

OC000000117685549

Date Mailed: 06/12/2020

RESPONSE TO REQUEST FOR CORRECTED FILING RECEIPT

Continuity, Priority Claims, Petitions, and Non-Publication Requests

In response to your request for a corrected Filing Receipt, the Office is unable to comply with your request because:

Prior-Filed Nonprovisional Application has been Improperly Indicated as a National Stage (35 U.S.C. 371) Application

Applicant submitted a benefit claim to a prior-filed nonprovisional application and improperly indicated that the prior-filed application is a national stage application under 35 U.S.C. 371. The Office's records show that the prior-filed application is an application filed under 35 U.S.C. 111(a). The Office has entered the benefit claim to the prior-filed application as a benefit claim to an application filed under 35 U.S.C. 111(a). Any request for a corrected filing receipt to include the indication that the prior-filed application is a national stage application will not be granted unless applicant supplies evidence that the prior application was in fact a national stage application. Accordingly, applicant should not submit such request without such evidence. Applicant should submit a corrected application data sheet (ADS) to delete the indication that the prior-filed application is a national stage application.

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**.

/tle/

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-US4
	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	CA

Mailing Address of Inventor:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Postal Code	N0K 1X0	**Country**	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-US4	**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-US4
	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)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	59115		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16157950	2018-10-11

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	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)
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	2014-08-18	9694636	2017-07-04
Prior Application Status	Pending				Remove
Application Number	Continuity Type	Prior Application Number		Filing or 371(c) Date (YYYY-MM-DD)	
15044905	~~a 371 of international~~ Continuation of	PCTCA2014050789		2014-08-18	
Prior Application Status	Expired				Remove
Application Number	Continuity Type	Prior Application Number		Filing or 371(c) Date (YYYY-MM-DD)	
PCTCA2014050789	Claims benefit of provisional	61867598		2013-08-19	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

☐ 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.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Applicant Information:

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

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.		
Mailing Address Information For Applicant:			
Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country CA		Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

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.

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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Nuhn Industries Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country i	CA	Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Robert A. H. Brunet/			Date (YYYY-MM-DD)	2020-06-03
First Name	Robert	Last Name	Brunet	Registration Number	55158

Additional Signature may be generated within this form by selecting the Add button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 records.

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 CooperationTreaty.

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 Acknowledgement Receipt

EFS ID:	39700763
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
Title of Invention:	AMPHIBIOUS PUMPING VEHICLE
First Named Inventor/Applicant Name:	Ian NUHN
Customer Number:	59115
Filer:	Hans O. Koenig/Stephanie Janssens
Filer Authorized By:	Hans O. Koenig
Attorney Docket Number:	NUN-0007-US4
Receipt Date:	12-JUN-2020
Filing Date:	03-JUN-2020
Time Stamp:	09:52:23
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	Application Data Sheet	2020-06-03-ADS-Corrected.pdf	143828 59f7db2649184fc1eeeefe6144a30e8d06711ba7	no	9

Warnings:

Information:	
This is not an USPTO supplied ADS fillable form	
Total Files Size (in bytes):	143828

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/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

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	16891627
Filing Date	2020-06-03
First Named Inventor	NUHN, Ian
Art Unit	
Examiner Name	
Attorney Docket Number	NUN-0007-US4

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	

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	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

	2	20140112093	A1	2014-04-24	Puck	
	3	20100144220	A1	2010-06-10	Bailey	
	4	20150258868	A1	2015-09-17	Visscher	

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

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]

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

	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.	☒
	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.	☐

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

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	16891627
	Filing Date	2020-06-03
	First Named Inventor	NUHN, Ian
	Art Unit	
	Examiner Name	
	Attorney Docket Number	NUN-0007-US4

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)	2020-06-10
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.**

Privacy Act Statement

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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 reques 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 Acknowledgement Receipt

EFS ID:	39678127
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	10-JUN-2020
Filing Date:	
Time Stamp:	12:31:11
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	Foreign Reference	CA-2002619.pdf	673271 836f34af754ca06ce827969fdea9620b85016c0b	no	17

Warnings:

Information:					
2	Foreign Reference	DE-3431345.pdf	975910 a39a91d181d089447fe89f24a9304524593 19a09	no	15
Warnings:					
Information:					
3	Foreign Reference	DE-2364962.pdf	1051645 00ac4907863f83938fe0e3356a2cccd5b7bd 79d2	no	19
Warnings:					
Information:					
4	Foreign Reference	WO-2008-038029.pdf	953649 6451639c9755cbf94a9f7801cc52b99a3146 e063	no	22
Warnings:					
Information:					
5	Non Patent Literature	2014-11-05-WO-ISRonPCTCA2014050789.pdf	2338385 db0c24fcf327c2e10a1e98aeba963984c43c 41fb	no	8
Warnings:					
Information:					
6	Non Patent Literature	2017-03-02-OA1-CN201480053275.pdf	379516 108e7666a110917efcc5ba055670cfd9a7b9 300b	no	18
Warnings:					
Information:					
7	Non Patent Literature	2017-11-06-OA2-CN201480053275.PDF	84859 4ad831ec9056e73a100e58cbbaddebb091f c3b3c	no	13
Warnings:					
Information:					
8	Non Patent Literature	2017-01-05-OA1-USSN15044905.pdf	696108 f9e281faa6bcbc89f0d79956e55715ec916a 06e1	no	17
Warnings:					
Information:					

9	Non Patent Literature	2017-08-23-OA1-USSN15586493.pdf	536644 17b7a3eaa3b47a69a794d97b042cbd1824c0a982	no	20
Warnings:					
Information:					
10	Non Patent Literature	2019-11-21-OA1-USSN16157950.pdf	207009 54e380256f028b2c10af1e69c5a47939cb5b4e59	no	6
Warnings:					
Information:					
11	Non Patent Literature	2017-08-23-OA1-EA201690422-31-cute.pdf	1468867 6ed5816ff46c3e9c275e4b7e364c20083c64ade0	no	4
Warnings:					
Information:					
12	Non Patent Literature	2017-12-15-FinalOA-USSN15586493-cute.pdf	323342 bdd64ee24fe748cc8172f6626527c487475e6857	no	9
Warnings:					
Information:					
13	Information Disclosure Statement (IDS) Form (SB08)	2020-06-10-IDS1-US4-cute.pdf	1587766 8392f27427e496b09786e0f9a2f40d1f5b809b35	no	5
Warnings:					
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New International Application Filed with the USPTO as a Receiving Office

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OTTAWA HULL K1A 0C9

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BREVETS
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TOPOGRAPHIES DE CIRCUITS INTÉGRÉS

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(19)(CA) **CANADIAN PATENT** (12)

PATENTS
TRADE-MARKS
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INDUSTRIAL DESIGN
INTEGRATED CIRCUIT TOPOGRAPHY

(54) Agitator and Pump Assembly

(72) Dépault, Marcel , Canada

(73) Dépault, Marcel , Canada

(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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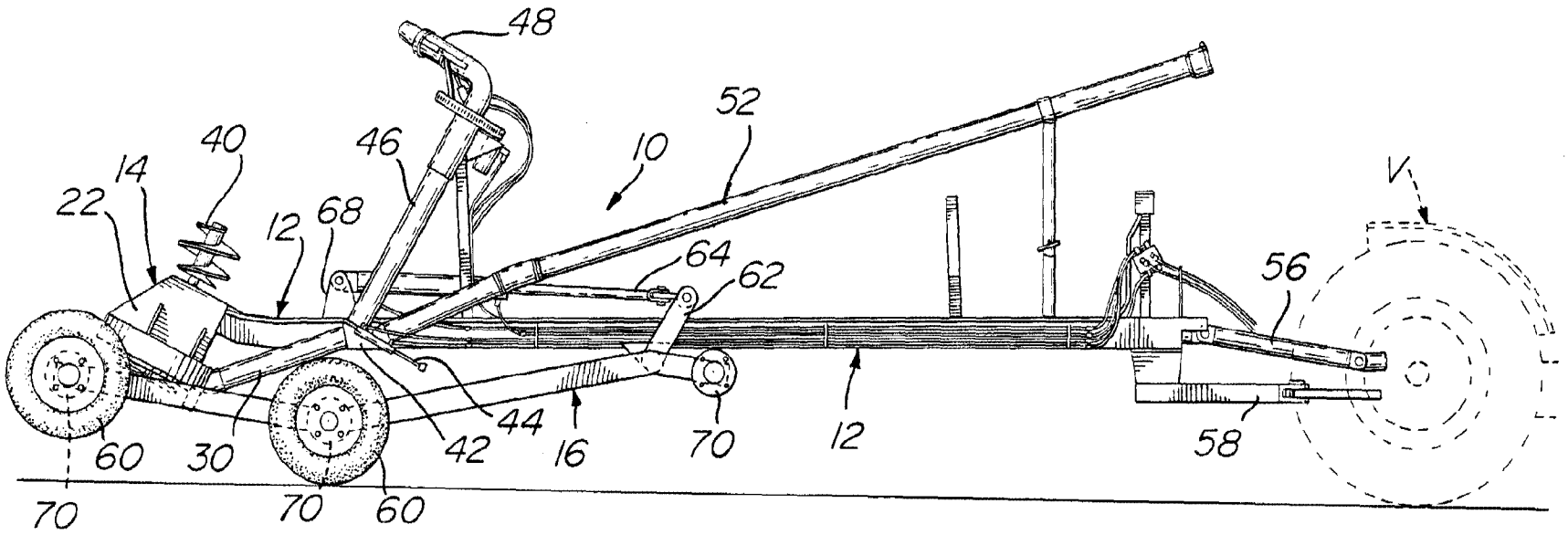


FIG. 1

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Swabey Ogilvy Renault

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FIG. 2

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Rowley Gilroy Kenault

FIG. 3

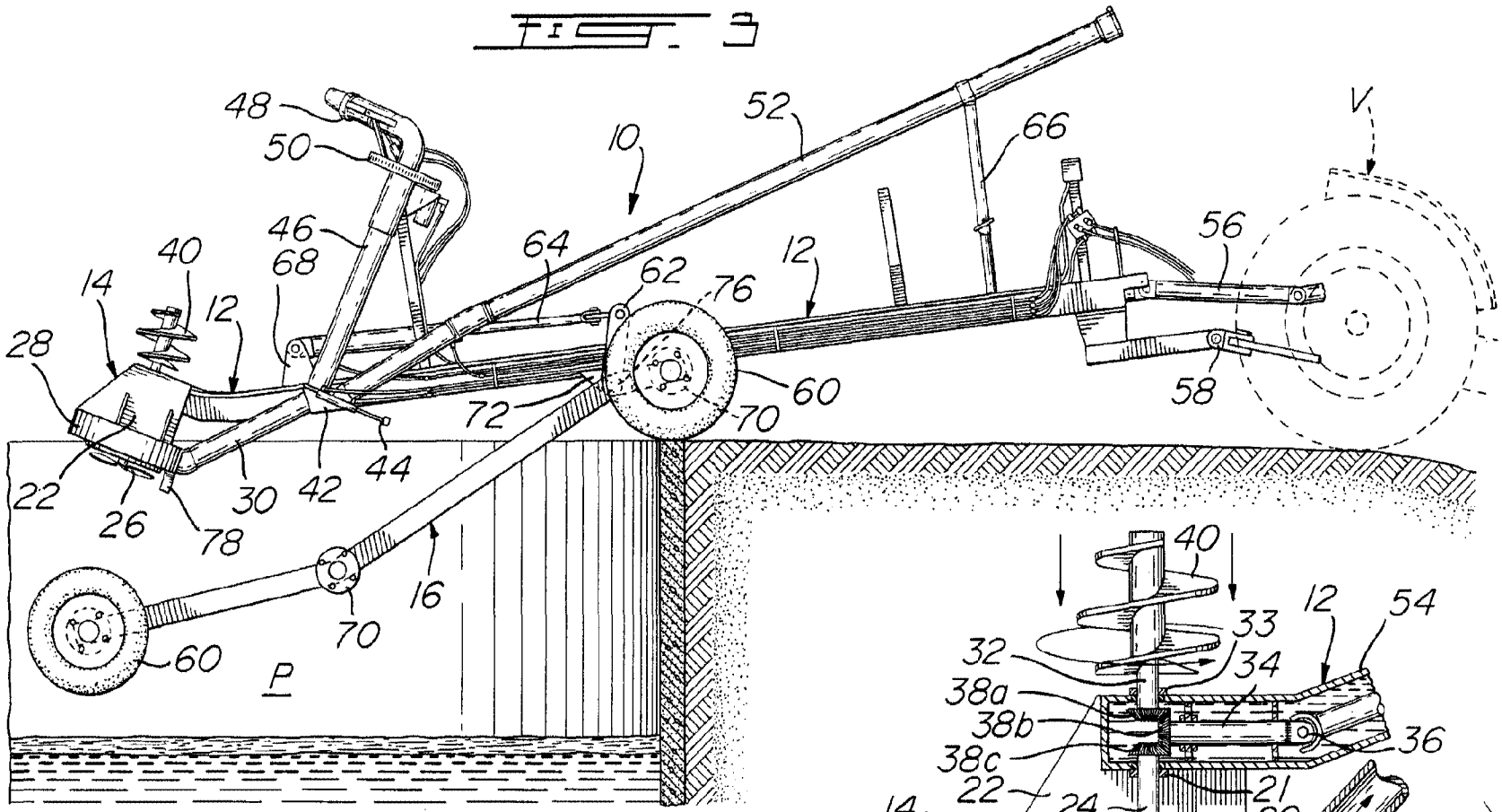


FIG. 6

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PATENT AGENTS

Dewbey Ogilvy Renault

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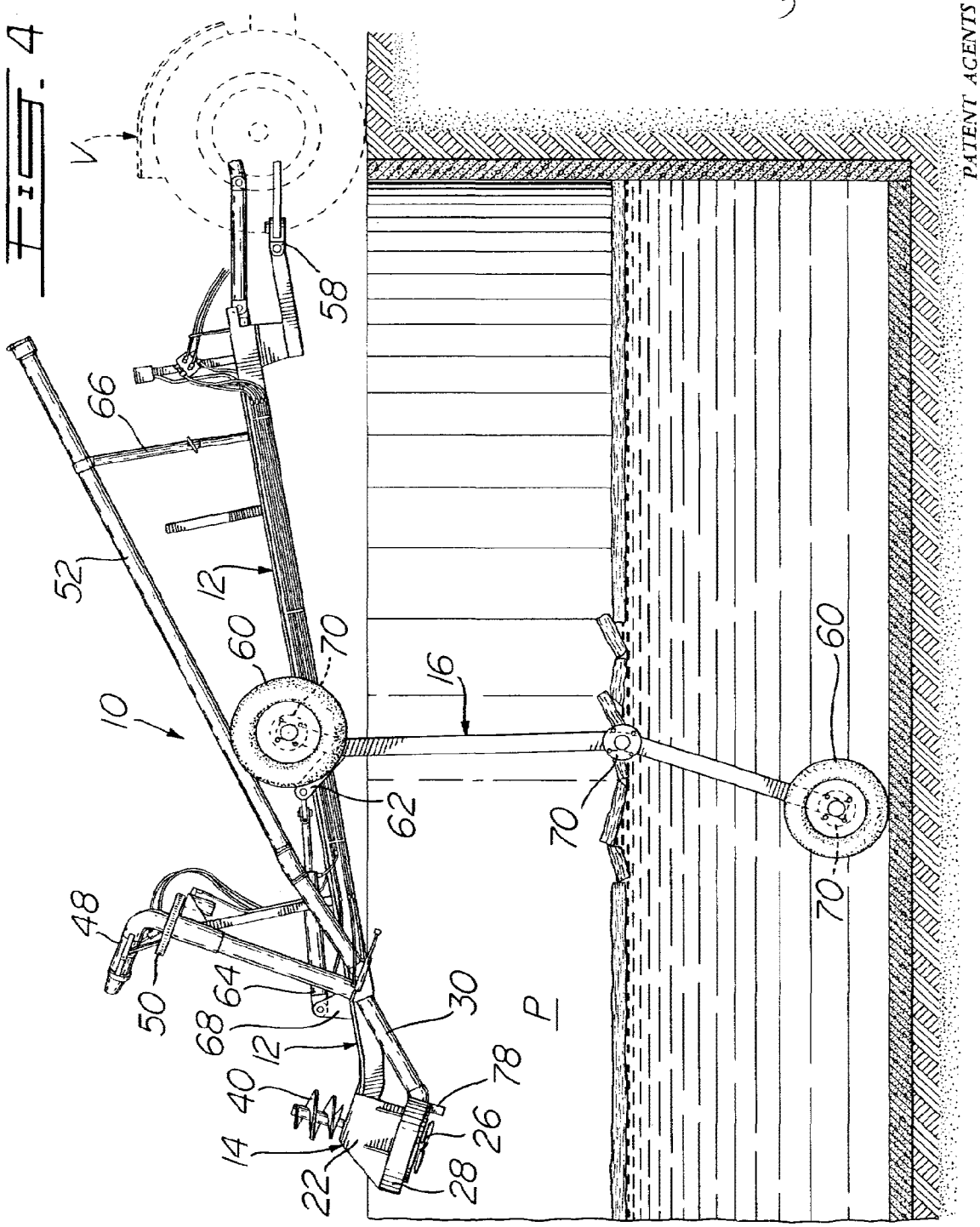


Fig. 4

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Rowley Gilroy Kennedy

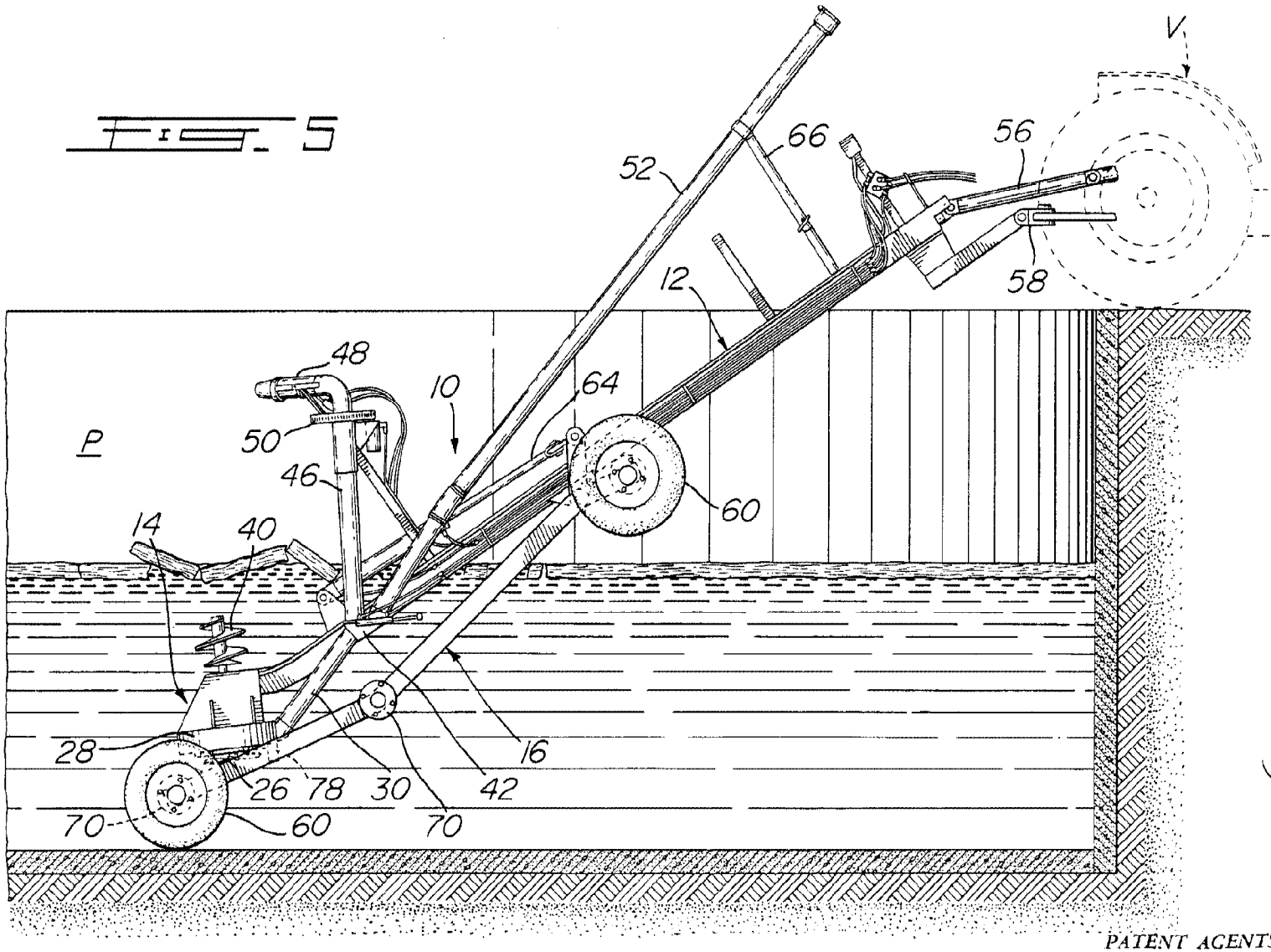


Fig. 5

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Swabey Ogilvy Renault

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Espacenet

Bibliographic data: DE3431345 (A1) — 1986-03-06

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**

Application number: DE19843431345 19840825

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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A01C 3/02
A01B 59/043
A01B 63/10

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(43) Offenlegungstag: 6. 3. 86

DE 3431345 A1

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(72) Erfinder:
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.

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BUNDESDRUCKEREI 01. 86 608 010/330

3431345

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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-1-

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 RÜhrvorrichtungen, 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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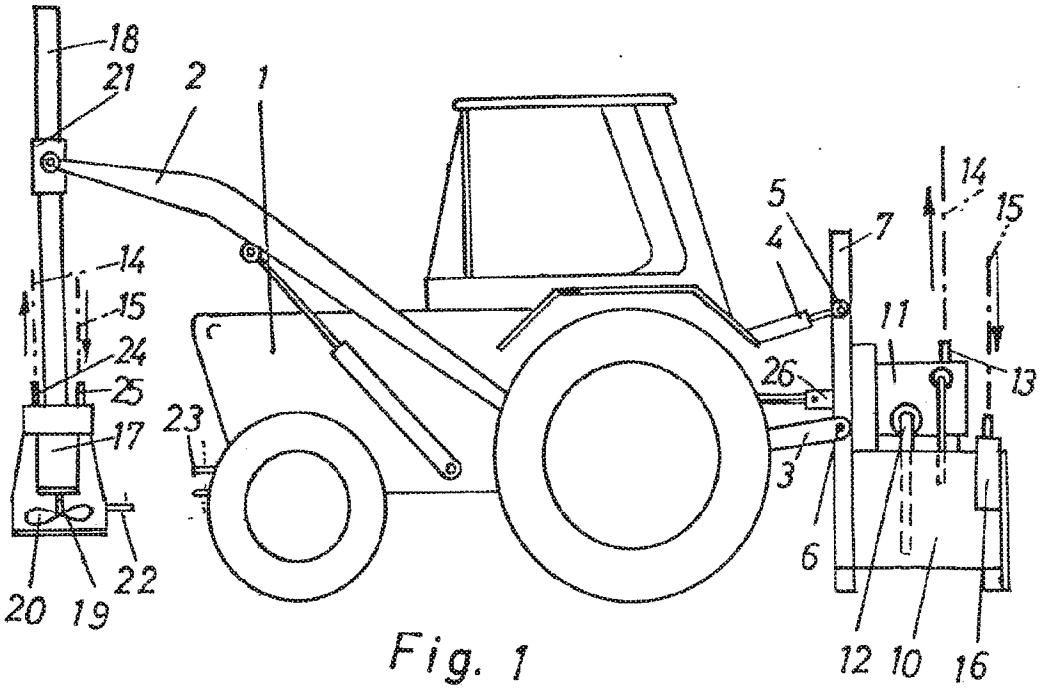


Fig. 1

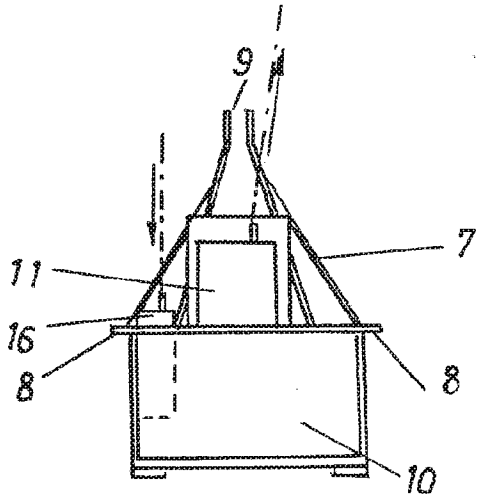


Fig. 2

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)

Applicant(s): KRONSEDER JOSEF ± (KRONSEDER, JOSEF, 8313 VILSBIBURG)

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DESCRIPTION DE2364962

[0001]

PATENTANWALT DIPL.-ING. OTTO BERMÜHLER

[0002]

8 MUNICH 40, the 23.12.1973 DBGENBBLDSTRASSE lo TBLEPON 3001352.

[0003]

F (Mti <cW (Mimcfceit 23193-804 Bank. AG. Some "35/32105

[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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(71) Anmelder: Kronseder, Josef, 8313 Vilsbiburg

(72) Erfinder: gleich Anmelder

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BETR.: MEINE AKTE 2334/P

IHR ZEICHEN:

Josef Kronseder, 8313 Vilsbiburg

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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ORIGINAL INSPECTED

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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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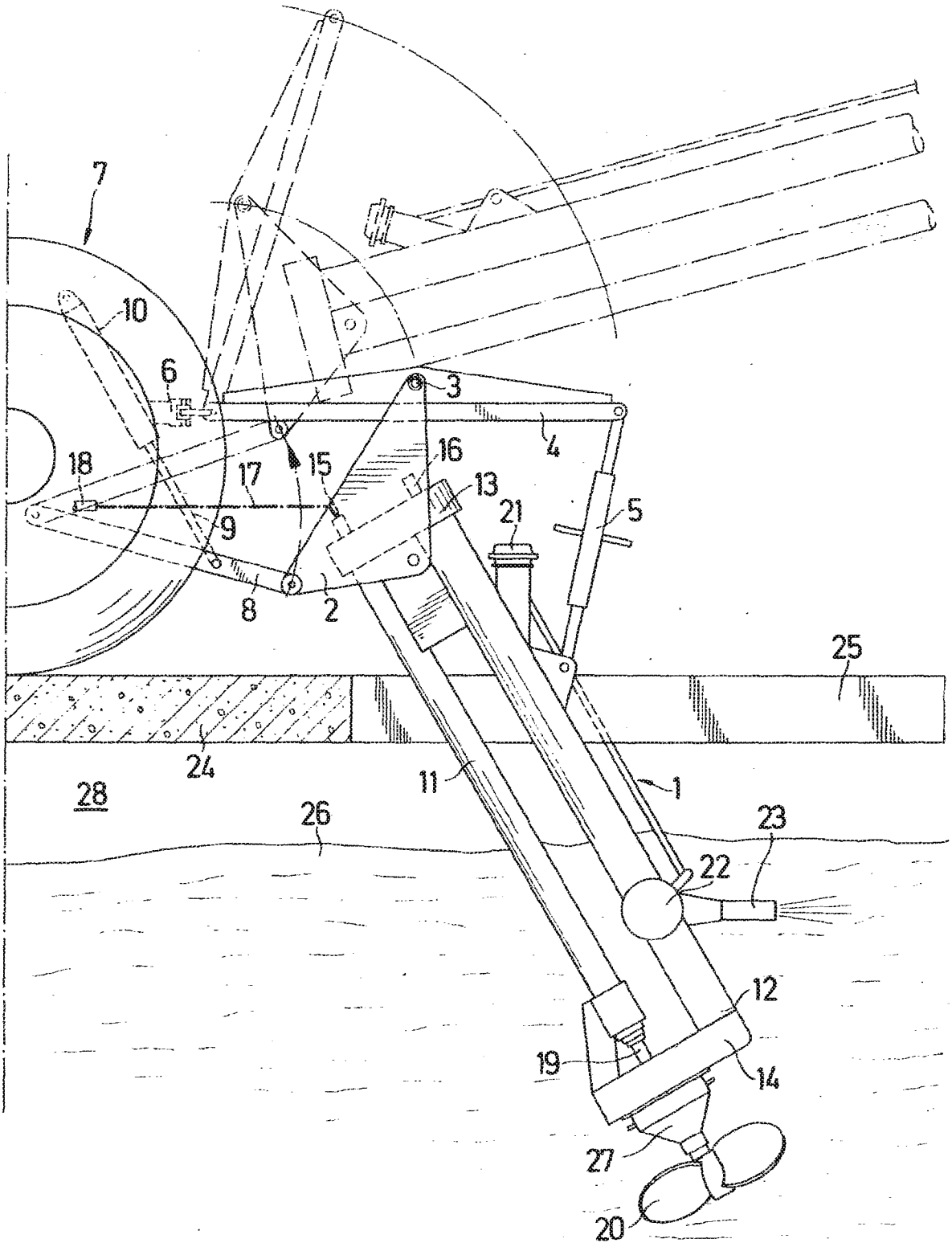
5. Vorrichtung nach den Ansprüchen 3 und 4, dadurch gekennzeichnet, daß an dem Ausleger (1) ein Hebel (8) angelenkt ist, der seinen Festpunkt am Schlepper (7) hat, und daß an diesem Hebel (8) ein hydraulischer Arbeitszylinder (10) angreift.

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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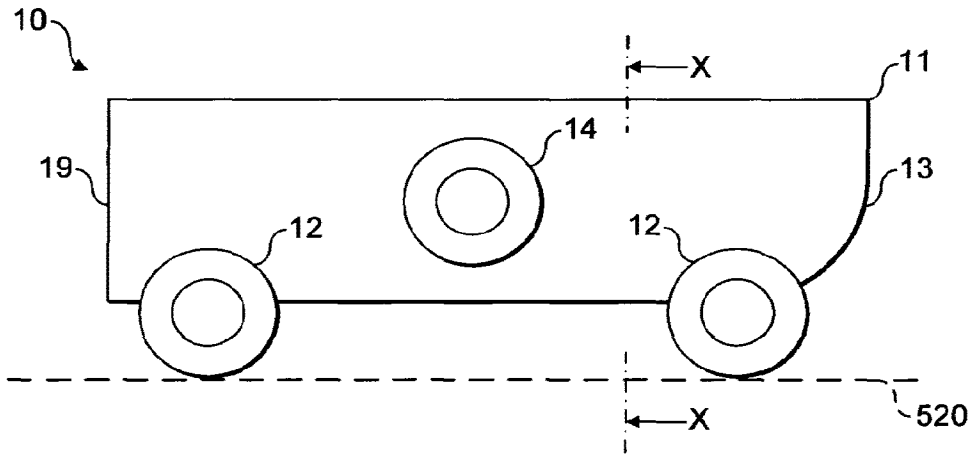
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[Continued on next page]

(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.

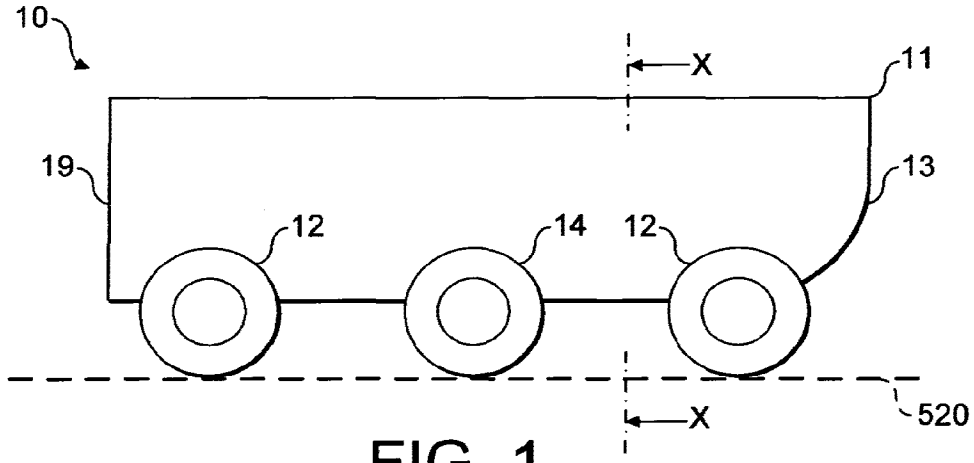


FIG. 1

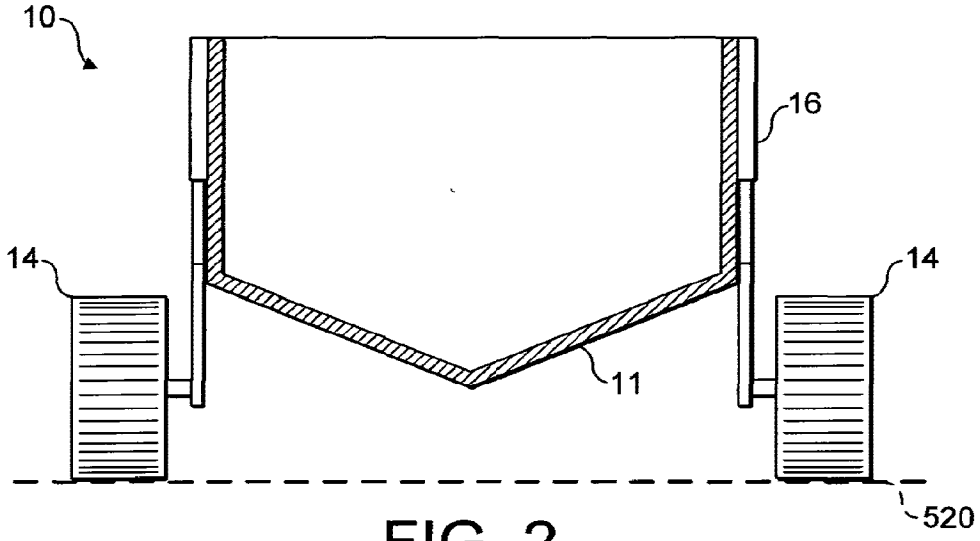


FIG. 2

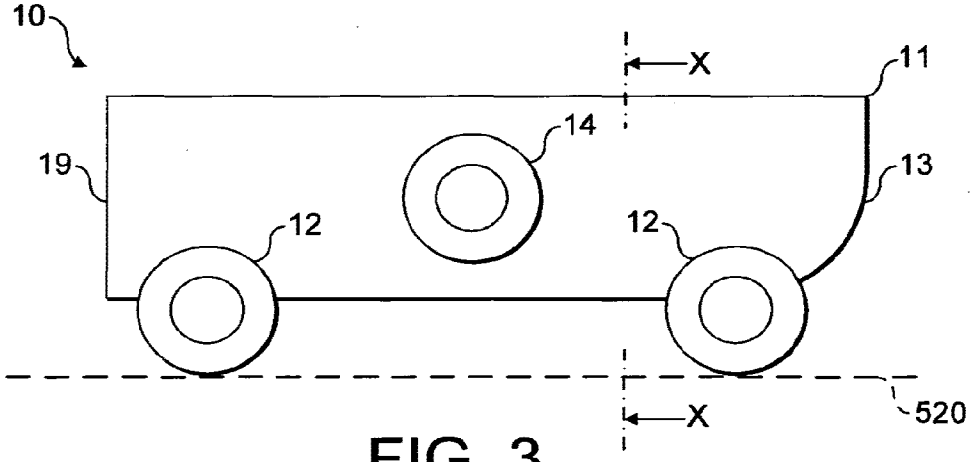


FIG. 3

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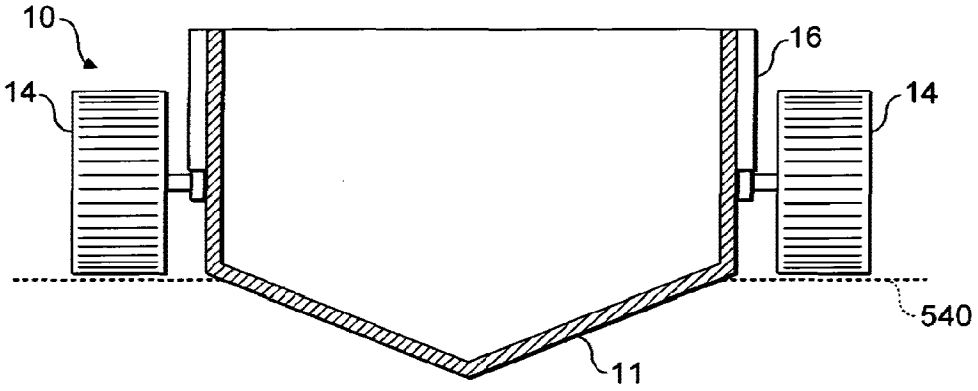


FIG. 4

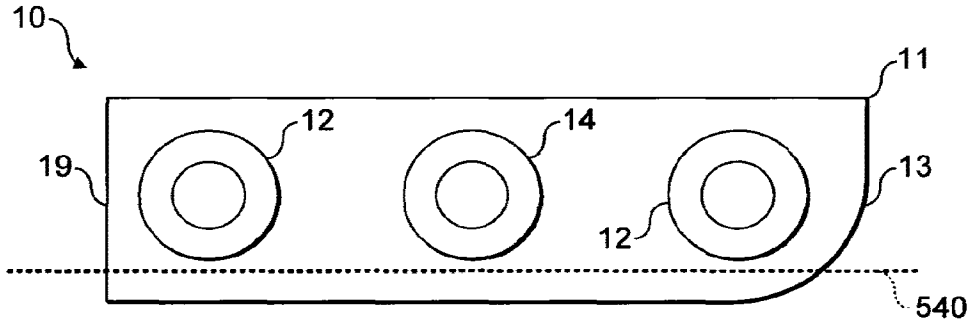


FIG. 5

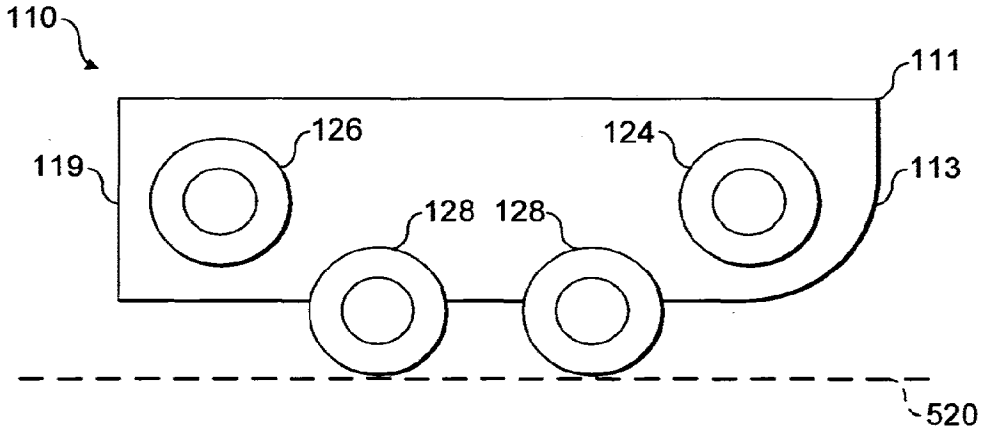


FIG. 6

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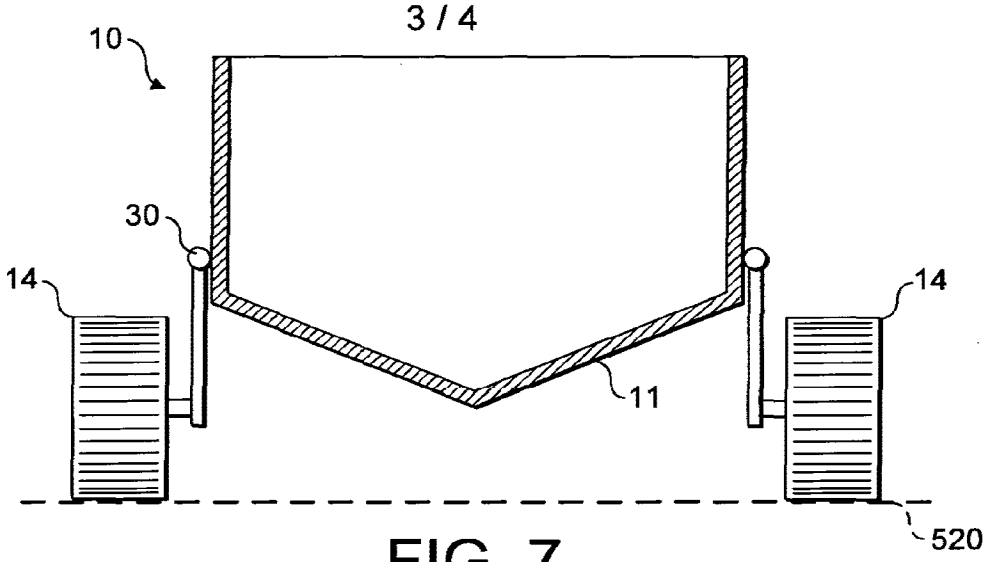


FIG. 7

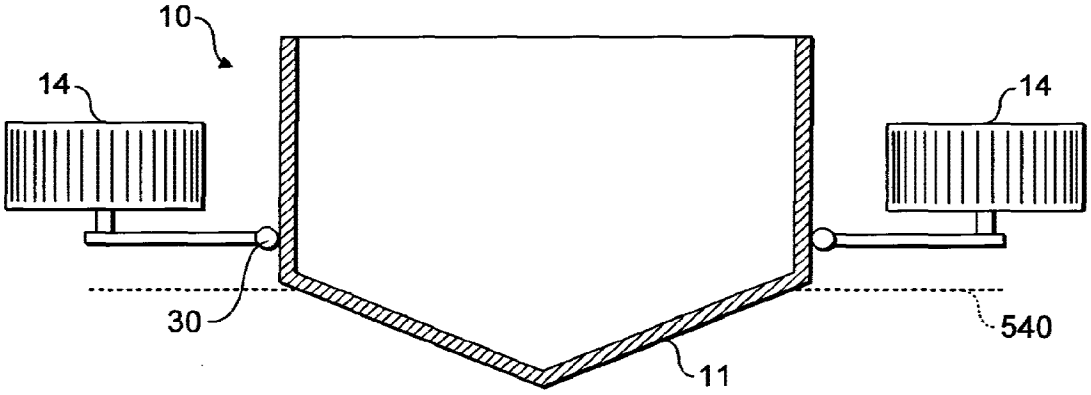


FIG. 8

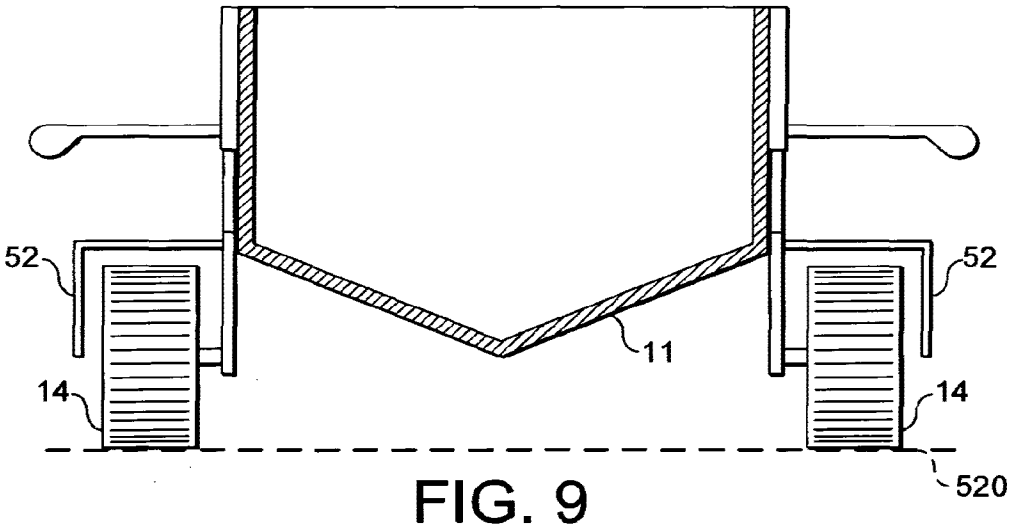


FIG. 9

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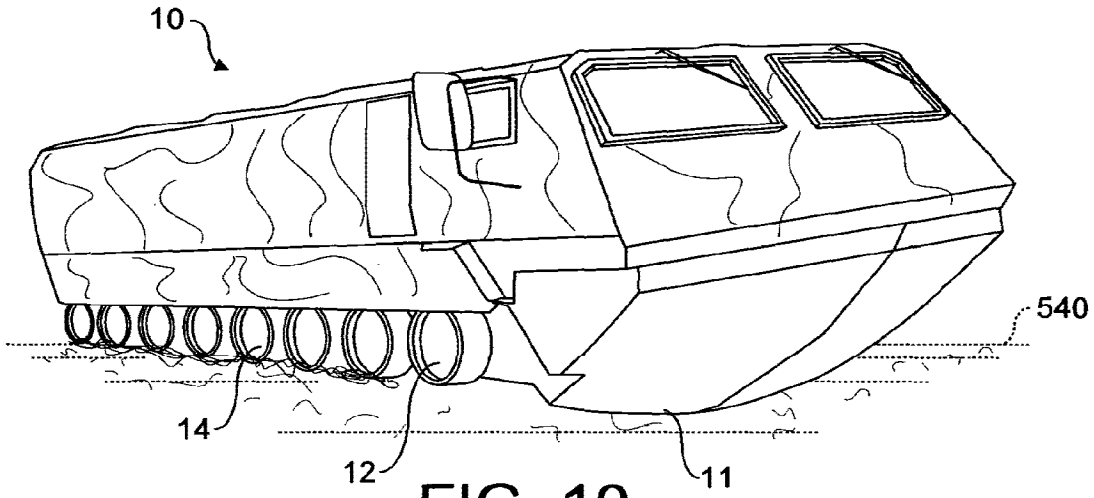


FIG. 10

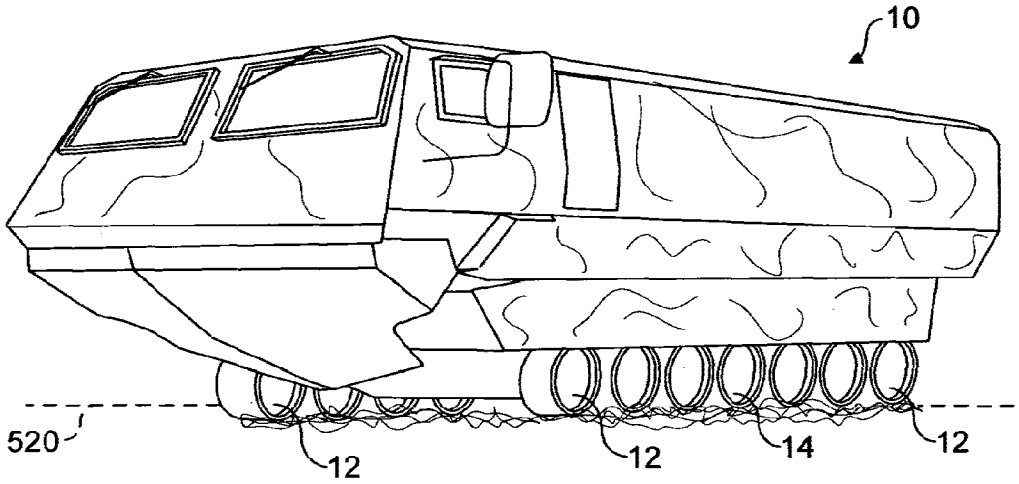


FIG. 11

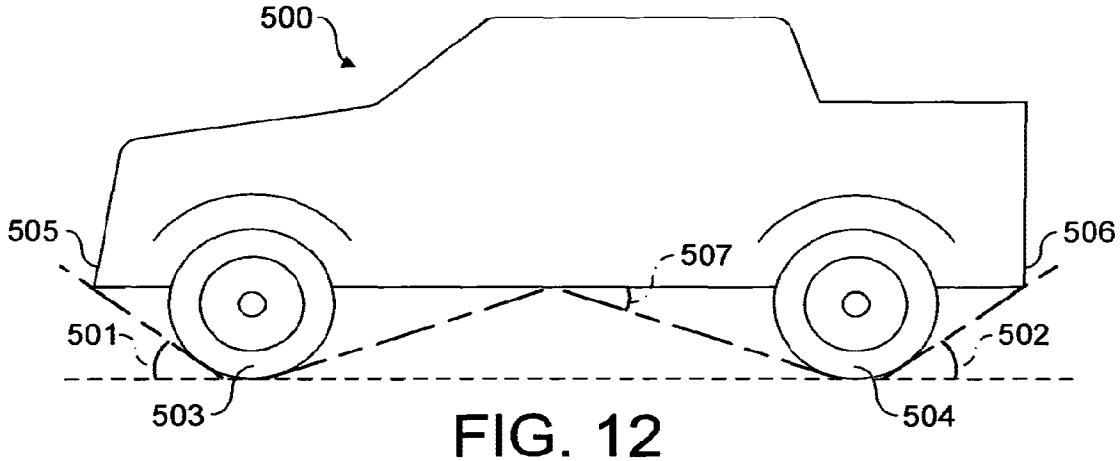


FIG. 12

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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

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
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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

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:

- [x] 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
- [x] 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
- [x] 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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Bazooka v. Nuhn - IPR2024-00098
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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CA2014/050789

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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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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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.

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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

Exhibit 2031
Bazooka v. Nuhn - IPR2024-00098
Page 876 of 1211

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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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.: 16/891,627 Filed/Issue Date: 06/03/2020

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. ☑ 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. ☑ 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 052826, Frame 0449, 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.

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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/	06/08/2020
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:	39649617
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	08-JUN-2020
Filing Date:	
Time Stamp:	10:05:04
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	2020-06-08-Statement37.pdf	94242 715a2037c52d7ab520370088d196aa98e181ffc0	no	3
Warnings:					
Information:					
			Total Files Size (in bytes):	620134	

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.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	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-US4	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

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	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)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	59115		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16157950	2018-10-11

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	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)
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	2014-08-18	9694636	2017-07-04

Prior Application Status	Pending	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15044905	a 371 of international	PCTCA2014050789	2014-08-18

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCTCA2014050789	Claims benefit of provisional	61867598	2013-08-19

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

☐ 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.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Applicant Information:

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.		
Mailing Address Information For Applicant:			
Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country	CA	Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

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.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NUN-0007-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	Nuhn Industries Ltd.

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	PO Box 160		
Address 2			
City	Sebringville	**State/Province**	ON
Country i	CA	Postal Code	N0K 1X0
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Robert A. H. Brunet/			Date (YYYY-MM-DD)	2020-06-03
First Name	Robert	Last Name	Brunet	Registration Number	55158

Additional Signature may be generated within this form by selecting the Add button. Add

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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-US4
	Application Number	
Title of Invention	AMPHIBIOUS PUMPING VEHICLE	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 records.

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 CooperationTreaty.

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.

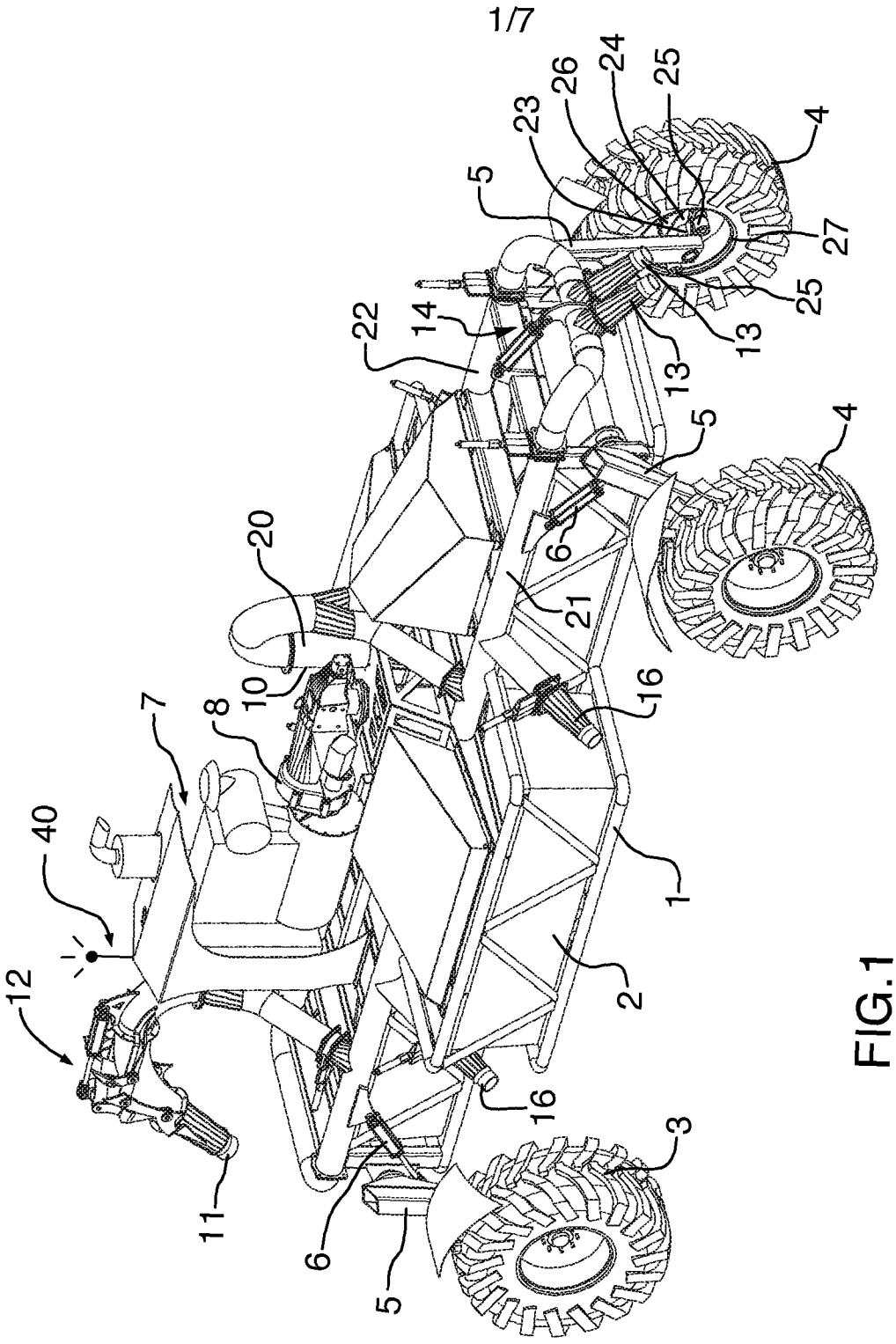


FIG.1

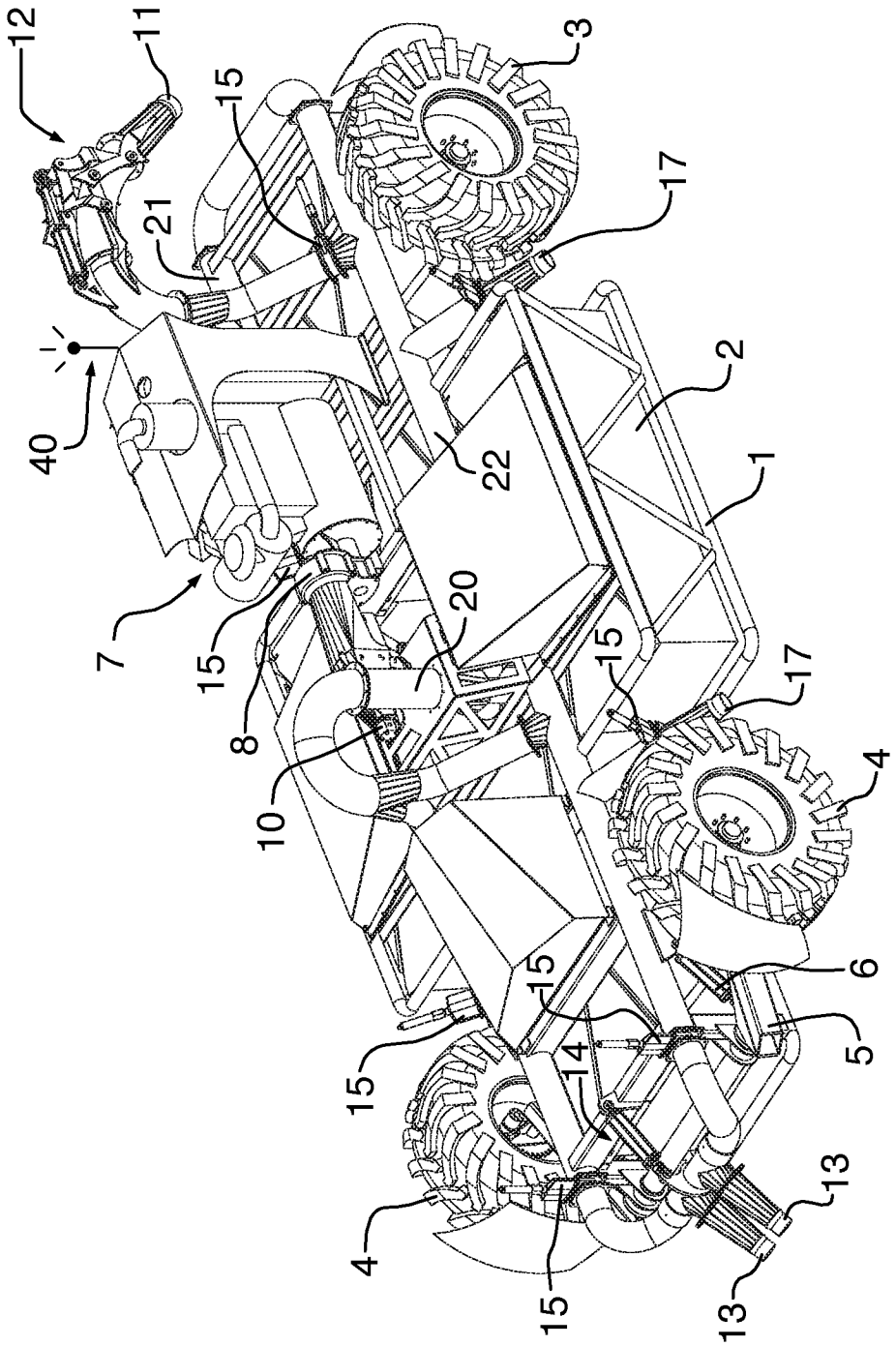


FIG.2

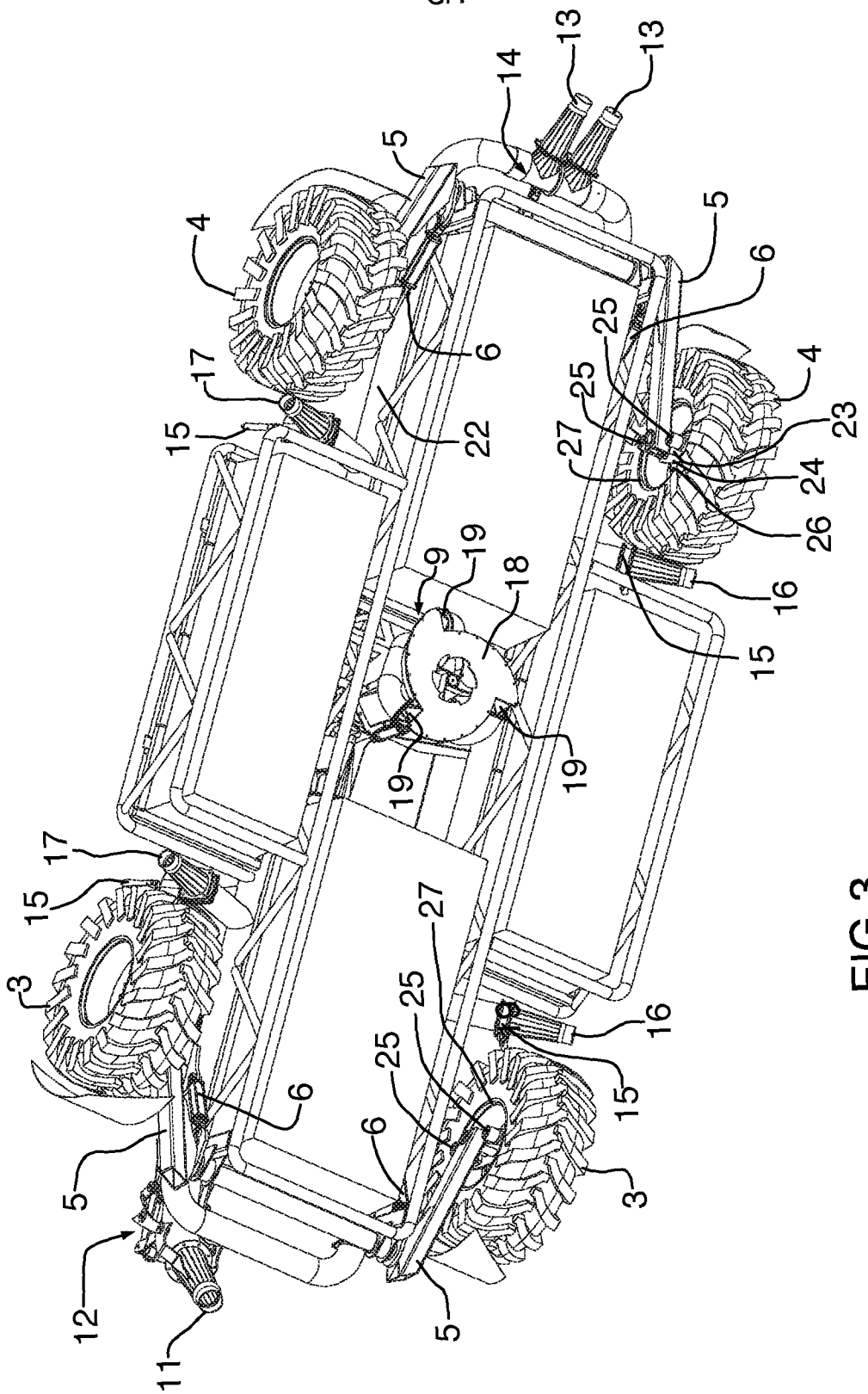

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FIG.3

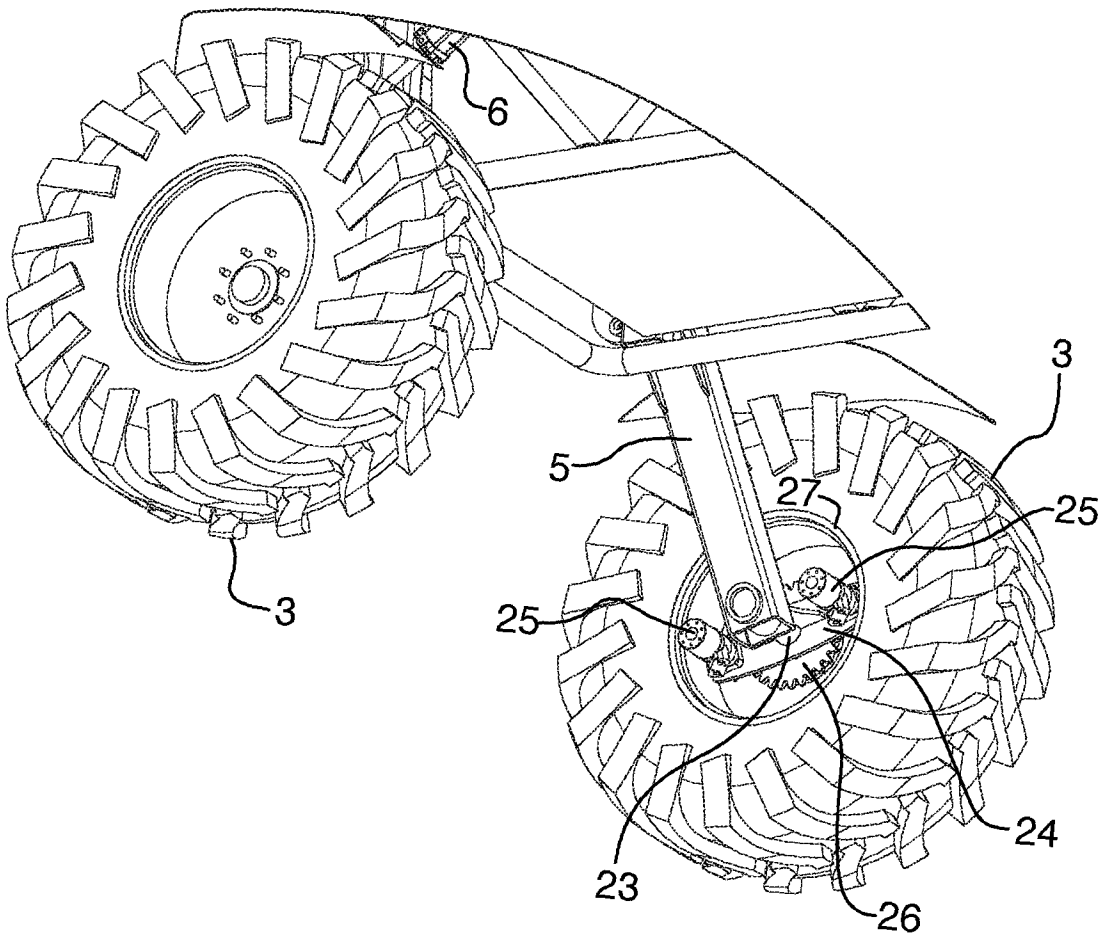


FIG.4

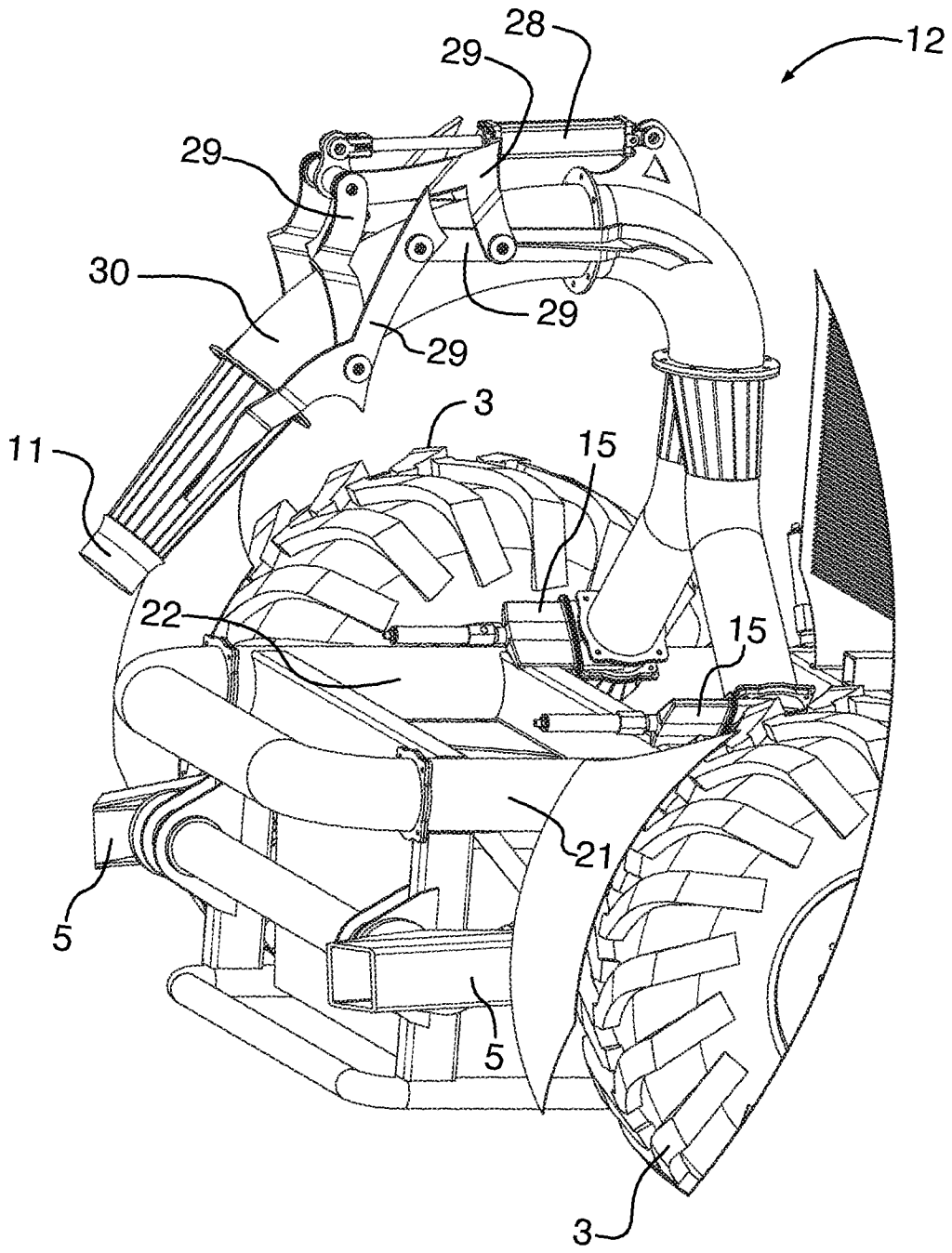


FIG.5

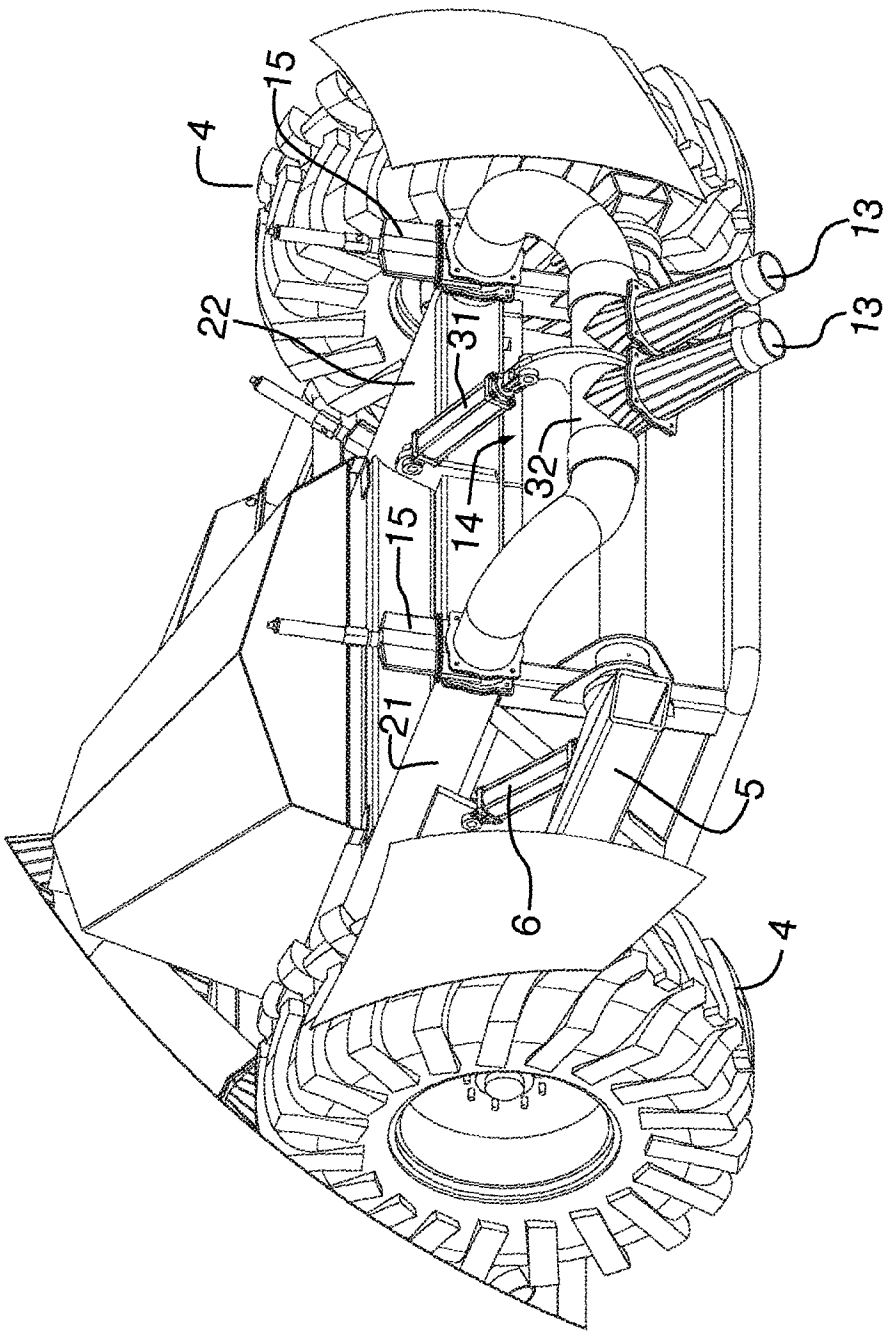


FIG.6

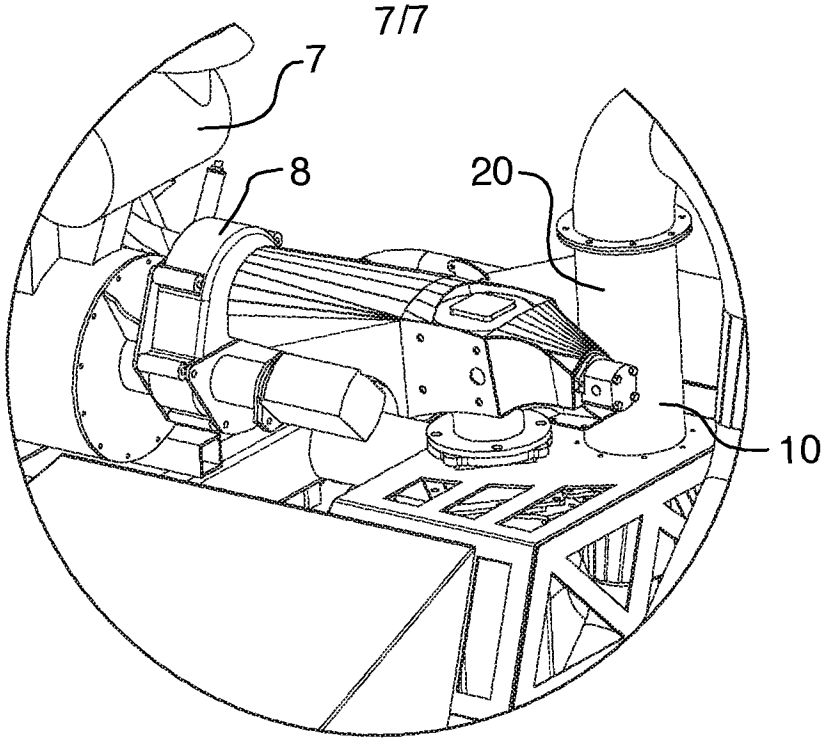


FIG.7

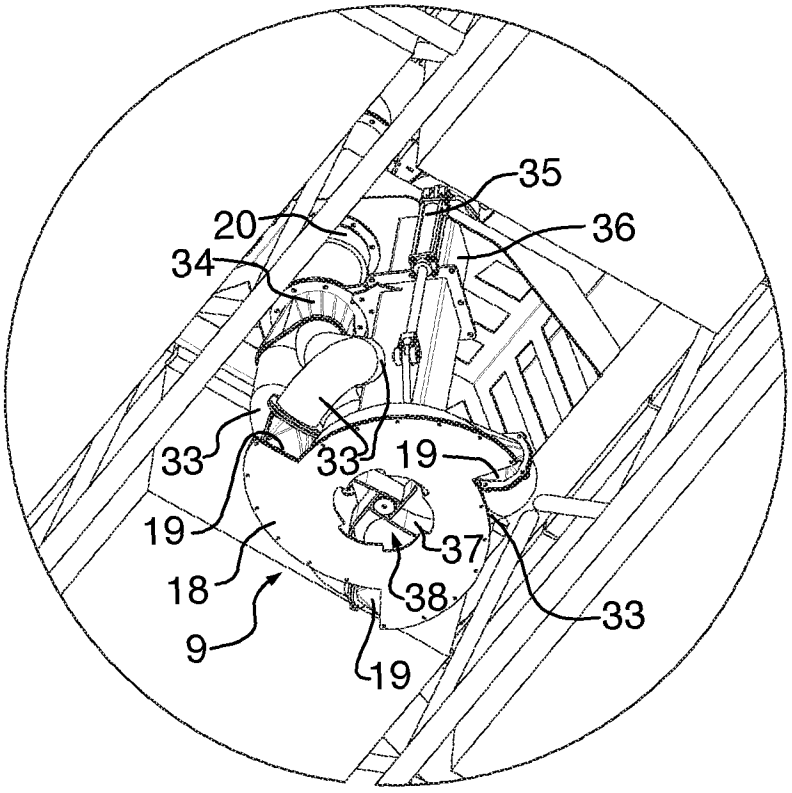


FIG.8

PTO/AIA/01 (06-12)
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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.

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.

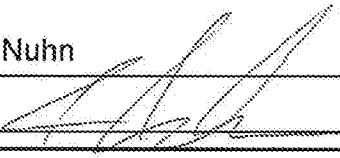
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Ian Nuhn Date (Optional): MAR 10th 16.

Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute 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.

AMPHIBIOUS PUMPING VEHICLE

Cross-Reference to Related Applications

[0001] This application is a continuation of United States Patent Application USSN 16/157,950, filed October 11, 2018, 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 19, 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 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

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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

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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 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

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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;

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[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 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

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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

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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 pumping vehicle comprising:

a floatable vehicle body;

ground engaging propulsion structure;

a fluid pump for pumping liquid manure;

a first fluid nozzle connected by a fluid conduit to the fluid pump; and,

a power source connected to a hydraulic pump and configured to provide power to both the ground engaging propulsion structure and the fluid pump.

2) The vehicle according to claim 1, wherein the ground engaging propulsion structure comprises a set of wheels or an endless track.

3) The vehicle according to claim 2, wherein the set of wheels comprises at least two powered wheels.

4) 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.

5) The vehicle according to claim 4, wherein the hydraulic pump is configured to provide hydraulic fluid power to both the ground engaging propulsion structure and the fluid pump.

6) The vehicle according to claim 4, wherein the ground engaging propulsion structure is operable at variable speed by a hydraulic motor.

7) The vehicle according to claim 1, wherein the power source is connected to the hydraulic pump by a mechanical drive and connected to the fluid pump by the mechanical drive.

8) The vehicle according to claim 1, wherein the ground engaging propulsion structure is able to raise and lower relative to the floatable vehicle body.

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9) The vehicle according to claim 1, wherein the vehicle comprises structure configured to raise and lower the pump relative to the floatable vehicle body.

10) The vehicle according to claim 1, wherein the fluid pump comprises a pump housing for immersion within the fluid, the pump housing comprising a bottom fluid inlet and at least two tangential fluid outlets.

11) The vehicle according to claim 10, wherein the at least two tangential fluid outlets are combined into the fluid conduit.

12) The vehicle according to claim 1, wherein the vehicle comprises a plurality of fluid nozzles comprising the first fluid nozzle and at least one second fluid nozzle connected to the fluid conduit.

13) The vehicle according to claim 12, wherein the vehicle further comprises valve structure in the fluid conduit configured to proportion fluid flow between the plurality of fluid nozzles.

14) The vehicle according to claim 13, wherein the plurality of fluid nozzles comprises at least two side fluid nozzles on opposite sides of the vehicle connected to the fluid conduit.

15) The vehicle according to claim 14, wherein the plurality of fluid nozzles and the valve structure co-operate to provide directional control and motive power for the vehicle when floating.

16) The vehicle according to claim 12, wherein at least the first fluid nozzle comprises first adjustment structure that is powered and configured to adjust an angle of the first fluid nozzle relative to the floatable vehicle body.

17) The vehicle according to claim 12, wherein the second fluid nozzle comprises second adjustment structure that is powered and configured to adjust an angle of the second fluid nozzle relative to the floatable vehicle body by an amount sufficient to cause forward or backward movement of the vehicle when floating.

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18) 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.

19) The vehicle according to claim 1, wherein the speed and direction of the vehicle are remotely controllable by an operator remote from the vehicle when the vehicle is ground engaging and when the vehicle is floating.

20) The vehicle according to claim 19, wherein the amount of fluid flow from the first nozzle and the direction of the first nozzle are remotely controllable by an operator remote from the vehicle when the vehicle is floating.

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ABSTRACT

An amphibious pumping vehicle has a floatable vehicle body, a ground engaging propulsion structure, a fluid pump, a plurality of fluid nozzles comprising a first fluid nozzle connected by a fluid conduit to the fluid pump and at least one second fluid nozzle connected to the fluid conduit, a valve structure in the fluid conduit, the plurality of fluid nozzles and the valve structure co-operating to provide directional control and motive power for the vehicle when floating, and a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump.

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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-US4

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 FILING FEE (ELECTRONIC FILING)	4011	1	75	75
UTILITY SEARCH FEE	2111	1	330	330
UTILITY EXAMINATION FEE	2311	1	380	380
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**785**

Electronic Acknowledgement Receipt

EFS ID:	39615673
Application Number:	16891627
International Application Number:	
Confirmation Number:	3433
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-US4
Receipt Date:	03-JUN-2020
Filing Date:	
Time Stamp:	15:19:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$785
RAM confirmation Number	E202063F20554806
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	2020-06-03-ADS.pdf	1880090 1c042483aa425dfbb82abb9fbfe6e1c188c27628	no	9
Warnings:					
Information:					
2	Drawings-only black and white line drawings	2020-06-03-Figures-NUN-0007-US4.pdf	1104542 2febaf6bd520bc94f4c4c0dbf173fa270bf87749	no	7
Warnings:					
Information:					
3	Oath or Declaration filed	2018-10-11-Dec_INsigned.pdf	2668235 973d5ef855017e840c487e64fc171b54e4922fb1	no	1
Warnings:					
Information:					
4		2020-06-03-Spec-NUN-0007-US4.pdf	105407 da458d43100b32839200aa91b53a2640903d1063	yes	17

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	13
Claims	14	16
Abstract	17	17

Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	35017 b9baf29b5b80a51ebb88d8a040740a4f2b7a31d7	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	5793291

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.

EXHIBIT L

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF IOWA
EASTERN DIVISION

NUHN INDUSTRIES LTD. Plaintiff, v. BAZOOKA FARMSTAR, LLC Defendant.	CASE NO. JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Nuhn Industries Ltd. ("Nuhn" or "Plaintiff"), for its Complaint against Defendant Bazooka Farmstar, LLC ("Bazooka" or "Defendant"), alleges as follows:

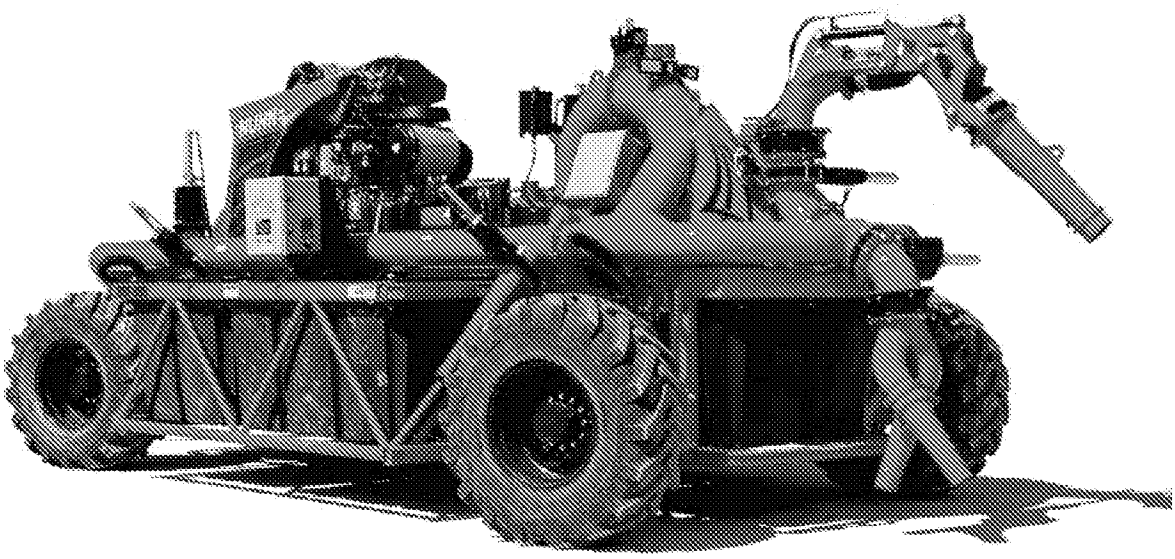
NATURE OF THE ACTION

1. This is an action for patent infringement under 35 U.S.C. § 271, *et. seq.*, by Nuhn against Defendant for infringement of United States Patent No. 11,358,425 ("the '425 Patent" or "the Patent-in-Suit") by making, using, selling, and/or offering to sell the "Wolverine Agitation Boat" in the United States.

PARTIES

2. Nuhn is a corporation organized and existing under the laws of the province of Ontario, Canada, having a principal place of business at 4816 Line 34, Sebringville, ON N0K 1X0 Canada.

3. Among numerous other products, Nuhn markets an amphibious pumping vehicle for use in agitating manure lagoons, that is known as the Lagoon Crawler. The Lagoon Crawler is covered by claims of the Patent-in-Suit.



4. Nuhn has sold the Lagoon Crawler to customers within Iowa.

5. On information and belief, Bazooka is a limited liability company organized and existing under the laws of the state of Iowa, having a principal place of business at 800 E. 7th Street, Washington, IA 52353. On information and belief, Bazooka is registered to do business in the State of Iowa and may be served through its registered agent Scott Szymanek at 800 E. 7th Street, Washington, IA 52353.

JURISDICTION AND VENUE

6. This Court has subject matter jurisdiction over the matters asserted in this Complaint under 28 U.S.C. §§ 1331 and 1338(a) because the claims herein arise under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including 35 U.S.C. § 271.

7. On information and belief, Defendant is subject to this Court's specific and general personal jurisdiction, due at least to Defendant being an Iowa limited liability company having its principal place of business in the State of Iowa and to Defendant's substantial business in this forum, including at least because Defendant has infringed the Patent-in-Suit directly and/or indirectly in this District. Defendant regularly transacts business in the State of Iowa and within

this District. Defendant engages in other persistent courses of conduct and derives substantial revenue from products and/or services in the State of Iowa and this District, and has purposefully established substantial, systematic, and continuous contacts within this District and should reasonably expect to be sued in a court in this District.

8. On information and belief, this Court has personal jurisdiction over Defendant because it has committed acts of patent infringement and/or contributed to and/or induced acts of patent infringement by others in the State of Iowa and in this District. On information and belief, Defendant directly has made, used, offered to sell, sold, and/or advertised (including through websites) in the United States, including to customers located within the State of Iowa and this District products that infringe one or more claims of the Patent-in-Suit. On information and belief, Defendant has purposefully and voluntarily placed the infringing products into the stream of commerce with the awareness, expectation, and/or intent that they will be purchased by consumers in the State of Iowa and in this District.

9. Venue is proper in this judicial district under 28 U.S.C. §§ 1391(b), (c) and 1400(b). Defendant resides in this District. Defendant is a limited liability company organized and existing under the laws of the State of Iowa and has a principal place of business in the State of Iowa and in this District. Additionally, Defendant has a regular and established place of business in this District. On information and belief, Defendant has committed, and continues to commit, acts of direct and indirect infringement in this District by, among other things, making, using, offering to sell, and selling products that infringe the Patent-in-Suit in this District.

NUHN'S LEGACY OF INNOVATION

10. Nuhn is a family-owned business that was founded in 1902 as Nuhn Welding & Manufacturing in Wartburg, Ontario, Canada. Initially, the business specialized in making

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horseshoes.

11. Since its founding, Nuhn has consistently adapted to changing needs in the farming industry, creatively providing solutions to that industry. For example, in 1965, Dennis Nuhn made the company's first liquid manure spreader. The spreader was fabricated from an old gas tank with airplane tires.

12. Nuhn's legacy of creativity has led to the development of a broad patent portfolio consisting of innovative, unique designs related to the liquid manure handling industry. The first such patent was an innovative dual tanker design that allows farmers to increase loads by up to 70%, with greater ease of handling.

13. An additional patented innovation is an alley vacuum that allows for the cleanup of manure in dairy barns. The inventions described and claimed in these patents have revolutionized how dairy barns are made and how liquid manure is handled.

14. As yet another example, Nuhn developed a multi-pump outlet that enables 30% more volume with the same horsepower as a conventional pump. This patented innovation has taken over the industry given the time savings, fuel savings, and better performance.

15. This lawsuit concerns another significant innovation from Nuhn, its Lagoon Crawler amphibious agitation vehicle, which is covered by the claims of the Patent-in-Suit.

16. Prior to this innovation, in 2009-2010 the best solution for pumping out a manure lagoon was an agitator that required a long pump driven by a tractor along the bank of a lagoon. Depending on the size of the lagoon, as many as four pump/tractor combinations were required to adequately mix the lagoon, and not leave any solids behind. To the extent this pump/tractor method was not sufficiently effective, lagoon operators would be required to scoop out residual solids from the pit.

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17. While other agitation boat devices were introduced to the market, they had numerous drawbacks that the Patent-in-Suit overcame. For example, the Lagoon Crawler made it easier for the vehicle to enter and exit the lagoon. A typical lagoon has a berm that requires navigation both up and then back down. Prior art designs required a trailer to launch the boat. Compounding this difficulty was the fact that the terrain around a lagoon is often muddy and wet. Indeed, a typical problem with the prior art boats was that they would get stuck on the bank or enter the lagoon too quickly and nosedive under the liquid.



18. Relatedly, prior art designs were often ineffective in exiting the lagoon, either because they got stuck in the mud at the bottom of the lagoon or got stuck on "islands" of solid buildup in the lagoon. This could lead to safety concerns when a tractor used chains to pull the boat from the lagoon. If the boat was stuck in the mud, the chains were known to break, endangering the drivers of the tractors.

19. The inventions of the Patent-in-Suit solved these considerable deficiencies in the

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prior art designs. As an all-terrain, amphibious vehicle, the Nuhn inventions allowed for superior agitation without fear of the vehicle becoming stuck either on the lagoon floor or islands of solid waste that may have formed. Indeed, the Lagoon Crawler, which is a commercial embodiment of the inventions claimed in the Patent-in-Suit, was an instant success leading to significant commercial success, as well as copying by Defendant.

THE PATENT-IN-SUIT

20. On June 14, 2022, U.S. Patent No. 11,358,425, entitled "Amphibious Pumping Vehicle," was duly and legally issued by the United States Patent and Trademark Office. A true and accurate copy of the '425 Patent is attached hereto as Exhibit 1.

THE WOLVERINE SERIES AGITATION BOAT

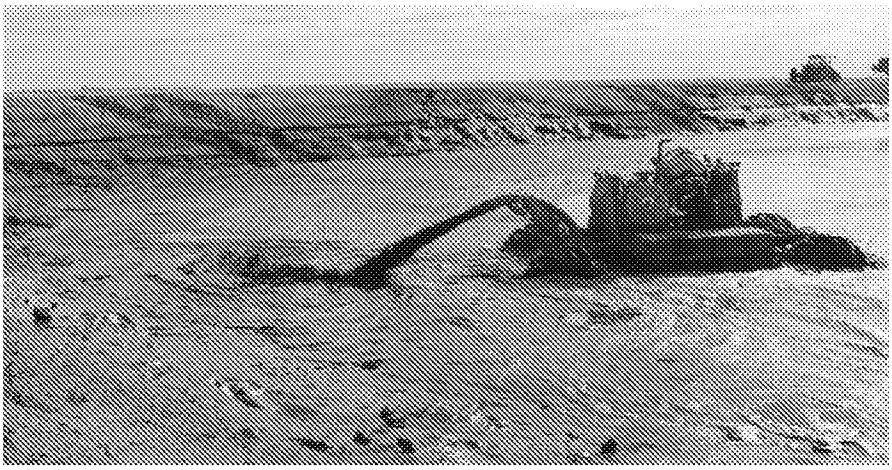
21. Upon information and belief, in early 2021, Bazooka began marketing its Wolverine Series Agitation Boat. *See* May 13, 2021, video published on YouTube.com (https://www.youtube.com/watch?v=ehAHKL442as).

22. The Wolverine Series Agitation Boat is marketed as a floating vehicle that can be driven into a manure lagoon in view of four "large diameter, aggressive tires [that] make climbing out of steep banks effortless." (https://bazookafarmstar.com/wolverine-series/; https://www.bazookafarmstar.com/wp-content/uploads/2021/04/IMG_3795-Edited-2-1024x683.jpg).

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23. The Wolverine Series Agitation Boat also includes a fluid pump for pumping liquid manure. The pump is powered by a power source. (https://bazookafarmstar.com/wp-content/uploads/2021/05/IMG_3850-straightened-1024x683.jpg).

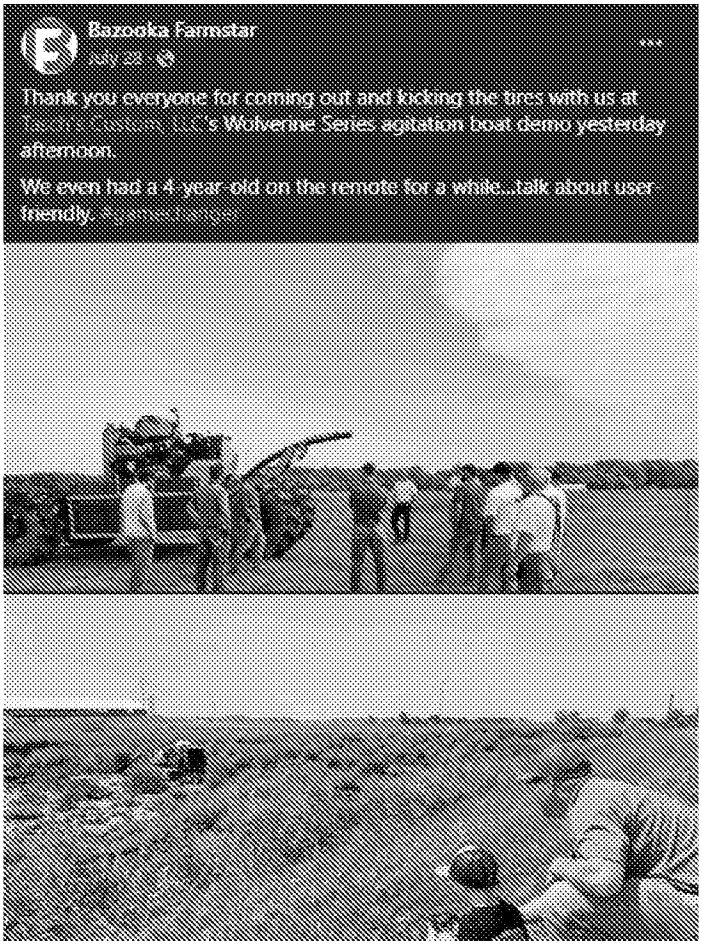


24. Lastly, Bazooka advertises that the Wolverine Series Agitation Boat is controllable by a remote control. (https://bazookafarmstar.com/wp-content/uploads/2021/04/GOPR1101-1620x1080.jpg).

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25. Upon information and belief, Bazooka has made, used, sold, and/or offered for sale the Wolverine Series Agitation Boat.



(https://www.facebook.com/bazookafarmstar)

DEFENDANT'S KNOWLEDGE OF THE PATENT-IN-SUIT

26. On June 14, 2022, Defendant was notified of its infringement of the '425 Patent by email seeking consent to a Motion for Leave to file a Third Amended Complaint in Civil Action No. 3:22-cv-00015-SMR-HCA currently stayed in this District between the parties.

CAUSE OF ACTION

(Infringement of the '425 Patent by Defendant)

27. Nuhn incorporates by reference and realleges each and every allegation of the previous paragraphs as if set forth herein.

28. Nuhn owns all substantial right, title, and interest in and to the '425 Patent, including the sole and exclusive right to prosecute this action and enforce the '425 Patent against infringers, and to collect damages for all relevant times.

29. The '425 Patent generally describes an amphibious vehicle that is equipped for pumping, including the pumping of liquid manure, such as animal manure contained in a farm lagoon.

30. The written description of the '425 Patent describes in technical detail each of the limitations of the claims, allowing a skilled artisan to understand the scope of the claims and how the non-conventional and non-generic combination of claim limitations is patentably distinct from and improved upon what may have been considered conventional or generic in the art at the time of the invention.

31. Defendant has made, used, sold, and/or offered for sale products, including its Wolverine Series Agitation Boat, that infringe one or more claims of the '425 Patent.

32. As set forth in the attached non-limiting claim chart (Exhibit 2), upon information

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and belief, Defendant, without authorization or license from Nuhn, has directly infringed and continues to directly infringe at least Claim 1 of the '425 Patent, either literally or under the doctrine of equivalents, by making, having made, using, distributing, selling, and/or offering for sale the Wolverine Series Agitation Boat.

33. Nuhn has been damaged as a result of the infringing conduct by Defendant alleged above. Thus, Defendant is liable to Nuhn in an amount that compensates it for such infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

34. Defendant's infringement of the '425 Patent has caused, and will continue to cause, Nuhn to suffer substantial and irreparable harm.

35. Nuhn is entitled to injunctive relief in accordance with 35 U.S.C. § 283.

36. Defendant has been aware that it infringes the '425 Patent since at least June 14, 2022. Since obtaining knowledge of its infringing activities, Defendant has failed to cease its infringing activities.

37. Defendant's infringement of the '425 Patent is, has been, and continues to be, willful, intentional, deliberate, and/or in conscious disregard of Nuhn's rights under the patent, justifying a trebling of damages under 35 U.S.C. § 284.

38. Defendant's infringement is exceptional and entitles Nuhn to attorneys' fees and costs under 35 U.S.C. § 285.

39. Nuhn complies with the marking requirements of 35 U.S.C. § 287 with respect to the '425 Patent.

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PRAYER FOR RELIEF

Wherefore, Nuhn respectfully requests that the Court enter judgment in its favor and against Defendant on the patent infringement claims set forth above and respectfully requests that this Court:

(a) enter judgment that, under 35 U.S.C. §§ 271(a) and (b), Defendant has directly infringed at least one claim of the Patent-in-Suit;

(b) in accordance with 35 U.S.C. § 283, enjoin Defendant, and all affiliates, employees, agents, officers, directors, attorneys, successors, and assigns and all those acting on behalf of or in active concert or participation with Defendant, preliminarily and permanently from infringing the Patent-in-Suit;

(c) award Nuhn all available and legally permissible damages and relief sufficient to compensate Nuhn for Defendant's infringement of the Patent-in-Suit, including to the full extent permitted by 35 U.S.C. § 284, together with interest, in an amount to be determined at trial;

(d) award Nuhn treble damages under 35 U.S.C. § 284 as a result of Defendant's willful and deliberate infringement of the Patent-in-Suit;

(e) declare this to be an exceptional case under 35 U.S.C. § 285 and award Nuhn costs, expenses, and disbursements in this action, including reasonable attorneys' fees; and

(f) award Nuhn such other and further relief that this Court deems just and proper.

JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Nuhn hereby demands a trial by jury on all issues triable of right by a jury.

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Date: July 20, 2022

/s/ Brandon R. Underwood

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63062471.2

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EXHIBIT M

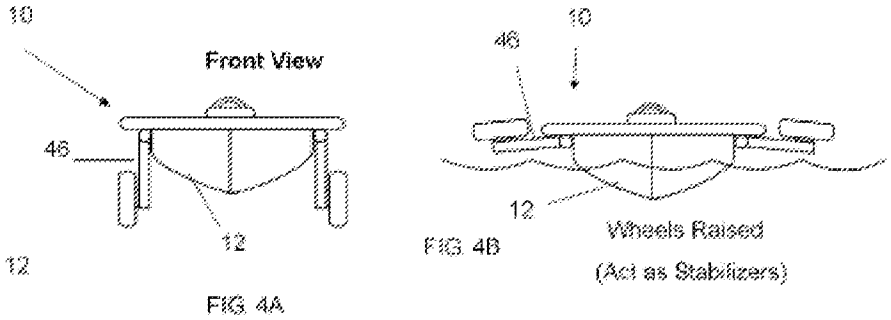
Claim	Carrier II (U.S. Pat. No. 7,478,817)
1. An amphibious vehicle comprising:	**Col. 1:10-16:** The present invention relates to a multi-purpose all-terrain vehicle. More specifically, the present invention is directed to an all-terrain hostile environment vehicle equipped with vari-ous aid units such as quick exchange medical, hazardous material, search, rescue, communications, fire fighting, and weapon units which can be deployed in remote areas or areas not accessible by paved roads. **Col. 1:37-41:** The terrain may be sandy, mountainous, muddy, swampy, jungle, or covered with snow, ice, mines, obstructions, vegetation, trees and in cities the roads may be to narrow to traverse. **Col. 1:66-67:** Another objective is to develop a small manned or unmanned robotic amphibious ground vehicle.
A floatable vehicle body	**Col. 3:8-10:** The all terrain vehicle 10 includes a sealed hull 12 having a platform 14 operably disposed within the hull 12. **Col. 3:26-28:** The hull 12 can be substantially sealably molded for pro-viding buoyancy for water crossings and provide way for necessary functional attachment of units. **Col. 5:61-65:** Alternatively, in another embodiment the drive train housing 53 can be pivot-ally 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 4B. **Figs. 4A, 4B:** 
Ground engaging propulsion structure comprising a plurality	**Col. 3:25-38:** The hull 12 can be substantially sealably molded for pro-viding buoyancy for water crossings and provide way for necessary functional attachment of units. For example, the hull 12 can optionally be molded with axle holes therethrough to provide for axle shafts to be passed therethrough and con-nect with one or more each wheels to provide a direct drive. The vehicle 10 can be

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
of ground engaging elements powered by a hydraulic motor;	direct all wheeled drive (8, 10, or 12 wheeled drive). All axles can be in a split splined design configuration (one splined axle shaft along with a splined female mating coupling) can be permanently attached inside the vehicle hull 12 on a sub frame assembly, with the other splined axle shaft end being capable of being inserted into the splined female mating coupling enabling the splined axle shafts to be separated. **Col. 4:33-40:** 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) and be of the scaleable engine tech-nology where as a specific horsepower engine can be used for instance 71 horsepower or 165 horsepower or 172 ½ horse-power etc. which can include engine housings with flanges 22 extending laterally from the engine for mounting. **Col.6:3-6:** The treads 62 can include a band type track system having a high-performance, low maintenance alternative to segmented metal type tracks/treads that are traditionally used for tracked combat vehicles today. **Col. 6:41 – Col. 7:11:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. n objective achieved here is to incorporate a back up drive train for an "emergency switch-over" in the event one drive train becomes inoperable. This can be accomplished by using one or more methods: shaft over hydro-static, shaft over chain, shaft over belt, hydro-static over chain, hydro-static over belt, belt over chain. This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off, (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-static drives that can be mechanically driven by either the engine, electroni-cally or the transmission or both using a combination of manual over electronic solenoid valves in the event the sole-noid valve falls to open it can be opened manually. 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. In example, the front two wheels can be belt driven, the next two wheels being hydro-statically driven, the next two wheels can be chain or direct drive shaft driven or electronically driven in a multitude of various configurations.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	Col. 7:46-54: The transmission contem-plated by the invention can be of a type configured using a torque converter driven, 3, 6 or more speed power-shift trans-mission. The transmission can be controlled by a microprocessor which can respond from the shift lever position input. The transmission can be programmed to be fully automatic through all three, six or more speeds or manually controlled, 1st through 3rd, and then automatically in 4th through 6th or more, in a 6 or more speed transmission.
a fluid pump for pumping liquid manure;	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel ank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein. **Col. 10:51-56:** 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 in fighting the fire.
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,	**Col. 4:33 – 40:** 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) and be of the scaleable engine tech-nology where as a specific horsepower engine can be used for instance 71 horsepower or 165 horsepower or 172 ½ horse-power etc. which can include engine housings with flanges 22 extending laterally from the engine for mounting. **Col. 5:40-43:** The unit 34 can be self powered (e.g., 40 independent engine) or can be powered by the vehicle engine unit 18 through stacked hydrostatic or hybrid electrical drive systems. **Col. 5:53-56:** Chain or belt operably connects to wheels 52 within a housing 53 which are configured to be complementary with the chosen drive, for example, a chain system would utilize a suitable sprocket on each wheel 52 for engagement therewith. **Col. 6:41-54:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. **Col. 6:60 – Col. 7:5:** This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off, (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-static drives that can be mechanically driven by either the engine, electroni-cally or the transmission or both using a combination of manual over electronic solenoid valves in the event the sole-noid valve falls to open it can be opened manually. **Col 8:54-58:** Engine unit 18 can be fueled by any number of fuels such as gasoline, diesel, propane, electric, hybrid electric, or natural gas and can be used to power the vehicle 10 as well as any of the other units described herein by using a suitable cou-pling. **Col. 9:54-56:** In addition, the tank 34 can include a self-contained engine 16' and can be fueled from the same fuel tank or source of power that supplies vehicle 10'.
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 vehicle is ground engaging; and, (4) control at least one of the speed and direction	**Col. 10: 2-5:** An adjustable electronic, electronic over air, air over hydraulic, air, hydraulic, automatic, automatic over manual valve system is provided to control the direction of flow of water, foam and dry chemicals through hoses. **Col 10:31-35:** 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. **Col. 11:5-16:** The operations of each unit described herein can be per-formed by remote control unit 42 which is operably quick connectable to each unit on the vehicle 10 having suitable connections therewith. The remote control unit 42 is also equipped with manual controls thereon to provide for opera-tion of the vehicle 10 manually as well as a transceiver equip-ment enabling it to be reprogrammed on a need to need basis, as well as enabling the vehicle 10 to be remotely controlled via line of sight, gps, or by air via aircraft such as the Preditor. Remote control mechanics, servos, hardware, wiring har-nesses can be quick releasable to facilitate easy replacement of any faulty components in case of damage or failure. **Col. 11:47-53:** 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 transmis-sion, electrical input and output, weapons diagnostics to include arming and

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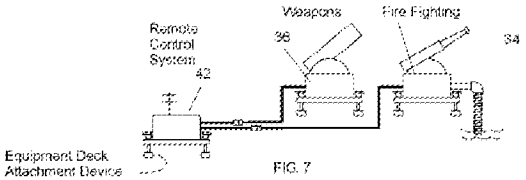
Claim	Carrier II (U.S. Pat. No. 7,478,817)
of the vehicle when the vehicle is floating.	disarming as well as including weapons selection if equipped with multiple weapons systems, water tank level, foam tank level, pump water pressure etc. **Figure 7:** 
2. The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump.	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel tank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein. **Col. 5:19-40:** The unit 34 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 decontamination mission from a distance that can not endanger the operator or crew members of the vehicle 10 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 unit 34 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High 30 Pressure/Low Volume, to Low Pressure/High Volume, to Low Pressure/Low Volume, to Pressure/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 area's of the world during or after a chemical agent

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	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. **Col. 8:45-53:** The tank 34 is equipped with a pump for providing various pressure and volume outputs to shoot sufficient volumes of water and/or foam and/or dry chemicals towards a fire from a distance that can not endanger the operator of the vehicle 10. 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 34 and are of a quick connect end couplings as is known in the art. **Col. 9:13-30:** For controlling the flow of water in the case where a series of valves and hoses are used, a first valve controls the flow of water through a first hose from tank 34 to a pump; a second valve controls the flow of the water from a second hose through the tank filter; and a third valve prevents water from flowing from master drain. 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 tanks 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 chambers output end. **Col. 9:60-62:** The hose can be fluidly attached to the pump. **Col. 10:51-56:** 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 in fighting the fire.
3. The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof.	**Col. 5:19-40:** The unit 34 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 decontamination mission from a distance that can not endanger the operator or crew members of the vehicle 10 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 unit 34 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High 30 Pressure/Low Volume, to Low Pressure/High Volume, to Low Pressure/Low Volume, to Pressure/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 area's of the world during or after a chemical agent

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	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. **Col. 9:13-30:** For controlling the flow of water in the case where a series of valves and hoses are used, a first valve controls the flow of water through a first hose from tank 34 to a pump; a second valve controls the flow of the water from a second hose through the tank filter; and a third valve prevents water from flowing from master drain. 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 tanks 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 chambers output end.
4. The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening.	**Col. 9:13-30:** For controlling the flow of water in the case where a series of valves and hoses are used, a first valve controls the flow of water through a first hose from tank 34 to a pump; a second valve controls the flow of the water from a second hose through the tank filter; and a third valve prevents water from flowing from master drain. 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 tanks 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 chambers output end. **Col. 10: 2-5:** An adjustable electronic, electronic over air, air over hydraulic, air, hydraulic, automatic, automatic over manual valve system is provided to control the direction of flow of water, foam and dry chemicals through hoses. **Col. 11:5-16:** The operations of each unit described herein can be per-formed by remote control unit 42 which is operably quick connectable to each unit on the vehicle 10 having suitable connections therewith. The remote control unit 42 is also equipped with manual controls thereon to provide for operation of the vehicle 10 manually as well as a transceiver equipment enabling it to be reprogrammed on a need to need basis, as well as enabling the vehicle 10 to be remotely controlled via line of sight, gps, or by air via aircraft such as the Preditor. Remote control mechanics, servos, hardware, wiring har-nesses can be quick releasable to facilitate easy replacement of any faulty components in case of damage or failure.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
5. The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit.	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel tank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein. **Col. 9:26-30:** 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 chambers output end.
6. The vehicle of claim 2, wherein the vehicle further comprises a nozzle at the end of the conduit.	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel tank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein. **Col. 9:26-30:** 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 chambers output end.
7. The vehicle of claim 1, wherein the at least one of speed and direction of the vehicle	**Col. 8:16-18:** The vehicle 10 is designed to be drivable on uneven ground, on mud, through deep water, or on other surfaces a regular automobile cannot be driven on. **Col. 8:27-28:** The transmission unit 32 can include a quick connect 66 for a propeller unit 68 to operate in water.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
when the vehicle is floating is 65 controlled by a fluid mover.	
8. The vehicle of claim **1,** further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.	**Col. 9:26-30:** 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 chambers output end.
10. The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel tank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein. **Col. 5:19-40:** The unit 34 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 decontamination mission from a distance that can not endanger the operator or crew members of the vehicle 10 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 unit 34 can include pump systems which have the capabilities to quickly change from flow rates and pressures of High 30 Pressure/Low Volume, to Low Pressure/High Volume, to Low Pressure/Low Volume, to Pressure/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 area's 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.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	Col. 8:45-53: The tank 34 is equipped with a pump for providing various pressure and volume outputs to shoot sufficient volumes of water and/or foam and/or dry chemicals towards a fire from a distance that can not endanger the operator of the vehicle 10. 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 34 and are of a quick connect end couplings as is known in the art. **Col. 9:26-30:** 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 chambers output end. **Col. 9:60-62:** The hose can be fluidly attached to the pump. **Col. 10:51-56:** 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 in fighting the fire.
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.	**Col. 5:40-43:** The unit 34 can be self powered (e.g., 40 independent engine) or can be powered by the vehicle engine unit 18 through stacked hydrostatic or hybrid electrical drive systems. **Col. 6:41-54:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. **Col. 6:60 – Col. 7:5:** This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off, (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	static drives that can be mechanically driven by either the engine, electroni-cally or the transmission or both using a combination of manual over electronic solenoid valves in the event the sole-noid valve falls to open it can be opened manually. **Col. 9:54-56:** In addition, the tank 34 can include a self-contained engine 16' and can be fueled from the same fuel tank or source of power that supplies vehicle 10'.
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.	**Col. 5:40-46:** The unit 34 can be self powered (e.g., independent engine) or can be powered by the vehicle engine unit 18 through stacked hydrostatic or hybrid electrical drive systems. Vehicle and secondary engines of the combustion type can be electronically started and all engine horse powers can be predetermined to be capable of the necessary power to drive the intended function(s) of the engine. **Col. 6:41- Col. 7:11:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either for a combination of direct drive shaft utilizing a suitable yoke system, hydro static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. An objective achieved here is to incorporate a back up drive train for an "emergency switch-over in the event one drive train becomes inoperable. This can be accomplished by using one or more methods: shaft over hydro-static, shaft over chain, shaft over belt, hydro-static over chain, hydro-static over belt, belt over chain. This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-static drives that can be mechanically driven by either the engine, electronically or the transmission or both using a combination of manual over electronic solenoid valves in the event the solenoid valve falls to open it can be opened manually. 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. In example, the front two wheels can be belt driven, the next two wheels being hydro-statically driven, the next two wheels can be chain or direct drive shaft driven or electronically driven in a multitude of various configurations **Col. 11:5-16:** The operations of each unit described herein can be per-formed by remote control unit 42 which is operably quick connectable to each unit on the vehicle 10 having suitable connections therewith. The remote control unit 42 is also equipped with

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	manual controls thereon to provide for opera-tion of the vehicle 10 manually as well as a transceiver equip-ment enabling it to be reprogrammed on a need to need basis, as well as enabling the vehicle 10 to be remotely controlled via line of sight, gps, or by air via aircraft such as the Preditor. Remote control mechanics, servos, hardware, wiring har-nesses can be quick releasable to facilitate easy replacement of any faulty components in case of damage or failure.
14. The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels.	**Col. 3:25-38:** The hull 12 can be substantially sealably molded for pro-viding buoyancy for water crossings and provide way for necessary functional attachment of units. For example, the hull 12 can optionally be molded with axle holes therethrough to provide for axle shafts to be passed therethrough and con-nect with one or more each wheels to provide a direct drive. The vehicle 10 can be direct all wheeled drive (8, 10, or 12 wheeled drive). All axles can be in a split splined design configuration (one splined axle shaft along with a splined female mating coupling) can be permanently attached inside the vehicle hull 12 on a sub frame assembly, with the other splined axle shaft end being capable of being inserted into the splined female mating coupling enabling the splined axle shafts to be separated. **Col. 5:51-56:** The drive train 46 can be chain or belt driven in this embodiment. Chain or belt 50 operably connects to wheels 52 within a housing 53 which are configured to be complementary with the chosen drive, for example, a chain system would utilize a suitable sprocket on each wheel 52 for engagement therewith. **Col. 6:25-32:** Shock absorbers can be employed on the vehicle 10 with quick release capabilities. Alternatively, it may be preferred to use low pressure tires (15 to 25 psi) that provide both shock absorption as well as a very low ground pressure achieving a 10 to 15 psi ground pressure using only the tires and 5 to 10 psi with the read/track system employed. This would enable the vehicle 10 to operate with or without a shock absorption system. **Col. 6:41-54:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
15. The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels.	**Col. 7:5-11:** 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. In example, the front two wheels can be belt driven, the next two wheels being hydro-statically driven, the next two wheels can be chain or direct drive shaft driven or electronically driven in a multitude of various configurations.
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.	**Col. 6:41 – Col. 7:11:** 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 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. an objective achieved here is to incorporate a back up drive train for an "emergency switch-over" in the event one drive train becomes inoperable. This can be accomplished by using one or more methods: shaft over hydro-static, shaft over chain, shaft over belt, hydro-static over chain, hydro-static over belt, belt over chain. This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off, (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-static drives that can be mechanically driven by either the engine, electroni-cally or the transmission or both using a combination of manual over electronic solenoid valves in the event the sole-noid valve falls to open it can be opened manually. 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. In example, the front two wheels can be belt driven, the next two wheels being hydro-statically driven, the next two wheels can be chain or direct drive shaft driven or electronically driven in a multitude of various configurations. **Col. 7:46-54:** The transmission contem-plated by the invention can be of a type configured using a torque converter driven, 3, 6 or more speed power-shift transmission. The transmission can be controlled by a microprocessor which can respond from the shift lever position input. The transmission can be programmed to be fully automatic through all three, six or more speeds or manually controlled, 1st through 3rd, and then automatically in 4th through 6th or more, in a 6 or more speed transmission.
17. The vehicle of claim 16, wherein the wheels	**Col. 6:41 – Col. 7:11:** 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

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
are operable at variable speed by the hydraulic motor.	drive systems can be employed on the vehicle 10 providing the user with multiple drive mechanism options. The drive train connection can be either/or a combination of/direct drive shaft utilizing a suitable yoke system, hydro-static, belt or chain. The direct shaft, hydro-static, belt or chain drive or drives or a combination thereof can connect to the driven axles within a housing which can be configured to be universally complementary with the chosen drive or drives, i.e., a chain system would utilize a suitable sprocket on each axle as the drive engagement mechanism. an objective achieved here is to incorporate a back up drive train for an "emergency switch-over" in the event one drive train becomes inoperable. This can be accomplished by using one or more methods: shaft over hydro-static, shaft over chain, shaft over belt, hydro-static over chain, hydro-static over belt, belt over chain. This can be accomplished by using a variety of mechanical components such as electromagnetic spring plates, electromagnetic clutches (such as the same used on simple automotive air conditioning systems), or air/hydraulic positive pressure clamps, centrifugal clutches using drive pulley to driven pulley (belt, chain, hydro-static actuated), power take off, (pto), back up configured separately from the transmission, located on the engine to be connected to the drive train, to independently stacked hydro-static drives that can be mechanically driven by either the engine, electroni-cally or the transmission or both using a combination of manual over electronic solenoid valves in the event the sole-noid valve falls to open it can be opened manually. 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. In example, the front two wheels can be belt driven, the next two wheels being hydro-statically driven, the next two wheels can be chain or direct drive shaft driven or electronically driven in a multitude of various configurations. **Col. 7:46-54:** The transmission contem-plated by the invention can be of a type configured using a torque converter driven, 3, 6 or more speed power-shift transmission. The transmission can be controlled by a microprocessor which can respond from the shift lever position input. The transmission can be programmed to be fully automatic through all three, six or more speeds or manually controlled, 1st through 3rd, and then automatically in 4th through 6th or more, in a 6 or more speed transmission.
18. The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit.	**Col. 4:14-32:** As is described herein, a plurality of platform mounting surface 24 can be formed on the frame system inside the hull 12 which can include a plurality of open surfaces and holes through which quick release connectors (pivot locks 26) can be inserted to attach and secure all functional mechanical components, weapons armaments, communications, fire-fighting equipment and pumps, pump engines, foam systems, dry chemical systems, split cell foam tanks, water hoses, nozzles, water tanks, special operations, laser, electrified water and or slippery slime tanks, microwave impulse equip-ment, water cannon, hazardous materials decontamination, search, rescue, medical, surveillance, cargo, transport, fuel tank, vehicle engine, transmission, wiring connectors, wire harnesses, instrument panels, access panels, computer, doors, windows, hatches, sensors, imaging equipment, etc, all of which can be equipped with mounting flanges 22 and pivot or shaft (single or double action) push button ball bearing positive locking pin system as used in the engine/transmission mounting platform described herein.

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Claim	Carrier II (U.S. Pat. No. 7,478,817)
	Col. 9:26-30: 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 chambers output end.
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.	**Col. 8:16-18:** The vehicle 10 is designed to be drivable on uneven ground, on mud, through deep water, or on other surfaces a regular automobile cannot be driven on. **Col. 8:27-28:** The transmission unit 32 can include a quick connect 66 for a propeller unit 68 to operate in water.
20. The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump.	**Col. 9:26-30:** 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 chambers output end.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent of:	
Ian Nuhn	
Patent No. 11,358,425	
Issued June 14, 2022	
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 1-21 of U.S. Patent No. 11,358,425 ("the '425 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. 11,358,425 to Nuhn ("the '425 patent")
Exhibit B	U.S. Patent Application Publication No. 2012/0185129 to Carrier ("Carrier I")
Exhibit C	U.S. Patent Application Publication No. 2014/0112093 to Puck ("Puck")
Exhibit D	U.S. Patent No. 7,478,817 to Carrier ("Carrier II")
Exhibit E	U.S. Patent Application Publication No. 2014/0288763 to Bennett ("Bennett")
Exhibit F	File History for U.S. Patent No. 11,358,425
Exhibit G	Request for Ex Parte Reexamination of U.S. Patent No. 10,974,557
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Exhibit I	File History for U.S. Patent No. 10,974,557
Exhibit J	Claim Chart for Ground 1 (Carrier I)
Exhibit K	Claim Chart for Ground 2 (Carrier I in view of Puck)
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Exhibit M	Claim Chart for Ground 3 (Carrier II)
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Exhibit P	U.S. Patent Application Publication No. 2013/0033070 to Kinsman ("Kinsman")

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 1-21 of U.S. Patent No. 11,358,425 ("the '425 patent"), a copy of which is attached as Exhibit A. These claims may be referred to herein individually, or collectively as the claims subject to reexamination. The '425 patent issued on June 14, 2022, listing Ian Nuhn as the sole inventor. The '425 patent is believed to be currently assigned to Nuhn Industries Ltd. ("Applicant"). This is a new request for *ex parte* reexamination ("Request").

The '425 patent relates to an amphibious pumping vehicle with a floatable vehicle body, a ground engaging propulsion structure, a fluid pump, a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump, and a remote control structure for controlling the ground engaging propulsion structure and a flow of fluid from the fluid pump. ('425 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 '425 patent were anticipated or obvious over known art at the time of the invention.

For the reasons detailed herein, there is compelling new prior art that raises substantial new questions of patentability with respect to the claims of the '425 patent.

II. Notice of Co-Pending Litigation

Pursuant to MPEP § 2282, Applicant has asserted the '425 patent in patent litigation entitled *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-00044-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 '425 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 '425 patent. The following references raise substantial new questions of patentability with respect to Claims 1-21:

1) U.S. Patent Application Publication No. 2012/0185129 to Carrier, attached as Exhibit B ("Carrier I");

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

3) U.S. Patent No. 7,478,817 to Carrier, attached as Exhibit D ("Carrier II"); 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 '425 patent, as described in detail with respect to Grounds 1 through 5 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

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cannot be imported. *Superguide Corp. v. DirecTV Enters., Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004). 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 1364.

"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. A piece of prior art that was previously before the Office can serve as the basis of a Substantial New Question (SNQ) of patentability, particularly where the prior art did not serve as the basis for any rejection. *In re Swanson,* 540 F.3d 1368, 1379-80 (Fed. Cir. 2008). In considering whether a SNQ exists, 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

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whether a reference that was previously considered by the PTO creates a substantial new question of patentability, the PTO should evaluate the context 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." MPEP § 2258. 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 § 2258.01 ("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.").

The Patent Trial and Appeal Board has emphasized, "the mere fact that prior art references were previously cited and made of record in the original examination is not determinative of a lack of SNQP," and "the pertinent inquiry is not whether 'the Office had before it,' prior art that already included the teachings now being relied upon by the Examiner during reexamination." *Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13 (P.T.A.B. September 25, 2015). "Rather," the PTAB explained, "the pertinent inquiry is whether the references of record were ***actually considered*** during the prosecution of the [underlying] application ***in the manner***

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now being considered in the present reexamination." *Id.* (emphasis added); *see also Ex parte Samsung Display Devices Co., Ltd.*, 2010 Pat. App. LEXIS 13383, at *43 (Comm'r Pat. & Trademarks June 30, 2010) (similar).

Where, like here, an examiner does not issue a claim rejection over the prior art in question during prosecution, or the prior art in question forms the basis of the specific rejection presented in the reexamination, that prior art is presented in a new light and properly considered on reexamination. *See Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13. The key issue is whether the PTO has already considered the specific argument, or viewed the prior art in the presented light—not whether the prior art reference was cited during prosecution. As the PTAB has explained, "the issue in determining an SNQ is whether an 'argument' had already been decided by the PTO." *Ex parte Invista N. Am., S.A.R.L.*, 2016 Pat. App. LEXIS 12692, at *10 (P.T.A.B. December 19, 2016). Where the PTO did not issue a specific rejection over the prior art, it is considered in a new light. *See id.* (holding references in question were presented in a new light; "Because none of these questions were decided by the PTO in the original examination that led to the [relevant] patent, the Examiner in this proceeding properly found an SNQ and ordered reexamination.") (citing MPEP § 2242); *Ex parte Auto. Techs. Int'l, Inc.*, 2014 Pat. App. LEXIS 174, at *15 (P.T.A.B. January 15, 2014) ("While the Examiner has relied upon the same prior art patents, such reliance on previously considered art does not preclude finding of SNQP. . . . Moreover, this combination is now being considered for a different purpose, that is, for rejecting claims 1-6 and 14 which were neither subjected to this same ground of rejection in the previous reexamination, ***nor overcome***.") (emphasis in original); *see also Ex parte Omega Patents, LLC*, 2019 Pat. App. LEXIS 11432, at *10 (P.T.A.B. December 4, 2019) ("Moreover, these rejections are based on different combinations of prior art references—a distinction that further establishes

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that these rejections constitute different grounds of rejection despite citing some overlapping references."); *Ex parte Apple Inc.*, 2016 Pat. App. LEXIS 8496, at *13-14 (P.T.A.B. September 19, 2016) (finding "a substantial new question of patentability has been established because Frank was not considered in a previous reexamination proceeding" where "no arguments with respect to the patentability were made by the Office with respect to Frank.").

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 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

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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 (quoting *Great Atl. & Pac. Tea Co. v. Supermarket Equip. Corp.*, 340 U.S. 147, 152-53, 71 S. Ct. 127, 130 (1950)). Indeed, "the 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. 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 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.

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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 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) ("As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole,

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the law does not require that the references be combined for the reasons contemplated by the inventor.").

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;

(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.

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

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V. Review of the '425 Patent

A. Disclosure of the '425 Patent

The '425 patent is titled "Amphibious Pumping Vehicle." The '425 patent relates to amphibious vehicles equipped for pumping a liquid from a farm lagoon or holding pond, such as liquid animal manure. ('425 Pat., Col. 1:25-29.) The technical field broadly states: "The invention relates to pumps and vehicles equipped for pumping." ('425 Pat., Col. 1:25-26.)

Amphibious vehicles configured for operation on land and in water were known in the art when the '425 patent was filed.[1] Pumps for manure lagoons were likewise known in the art at the time the '425 patent was filed. The '425 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.

('425 Pat., Col. 1:33-41.)

These pumps for manure lagoons identified by the '425 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.

[1] *See, e.g.*, U.S. Patent No. 7,833,071 to Gaither, which 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.

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('425 Pat., Col. 1:41-49.) Therefore, the '425 patent identifies the problem of reaching, and thus agitating, the entire lagoon from shore as the lagoons increase in size. Prior art manure agitators, such as U.S. Patent Application Publication No. 2014/0112093 to Puck, did not address the additional problems of exiting a floating vehicle from a manure pond and transporting the floating vehicle between manure ponds.

The solution to this problem identified by the '425 patent was to include a pump on an amphibious vehicle suitable for use with large manure lagoons. ('425 Pat., Col. 1:50-52.) The '425 patent is directed to an amphibious pumping vehicle. ('425 Pat., Abstr.) The Summary of the Invention explains that the amphibious pumping vehicle includes the following elements: ground engaging propulsion structure; a fluid pump; a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump; and a remote control structure for controlling the ground engaging propulsion structure and a flow of fluid from the fluid pump. ('425 Pat., Col. 1:56-63.) Each of these structures will be addressed in turn:

Vehicle Body: The '425 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." ('425 Pat., Col. 1:65-67.) The floatable vehicle body 1 is depicted in Figure 1.

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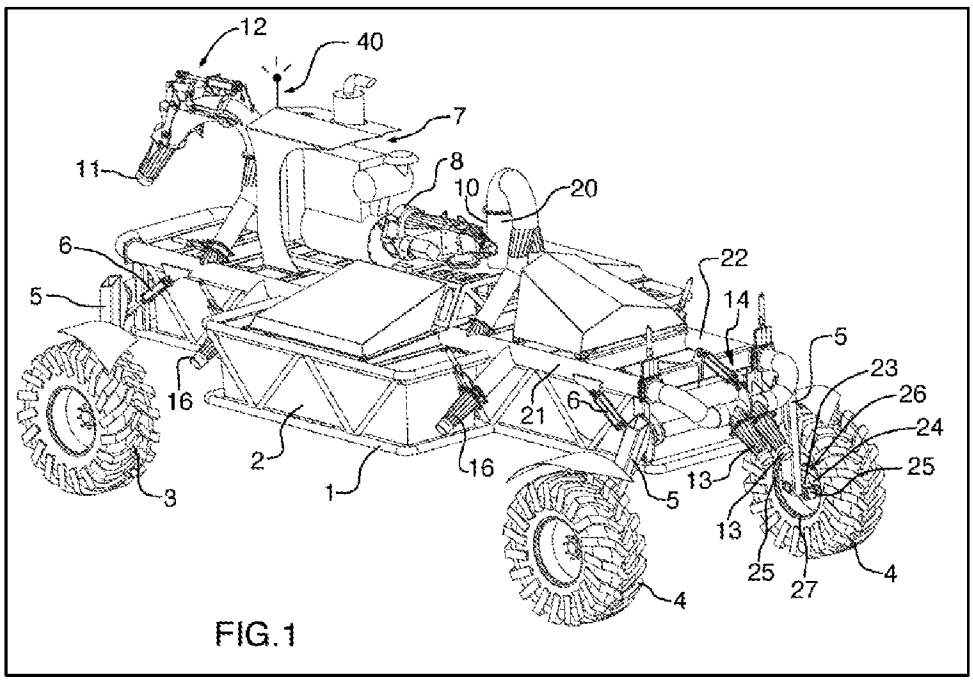


FIG.1

('425 Pat., Fig. 1.)

Ground Engaging Propulsion Structure: The '425 patent explains that the ground engaging propulsion structure "may comprise an endless track or a set of wheels." ('425 Pat., Col. 2:8-9.) "The set of wheels may comprise two or more wheels, for example four wheels, six wheels, or eight wheels." ('425 Pat., Col. 2:9-11.) 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." ('425 Pat., Col. 2:13-15.)

The '425 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." ('425 Pat., Col. 2:18-21, 26-28.) 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." ('425 Pat., Col. 2:21-24.) The hydraulic motors 25 are shown in Figure 4.

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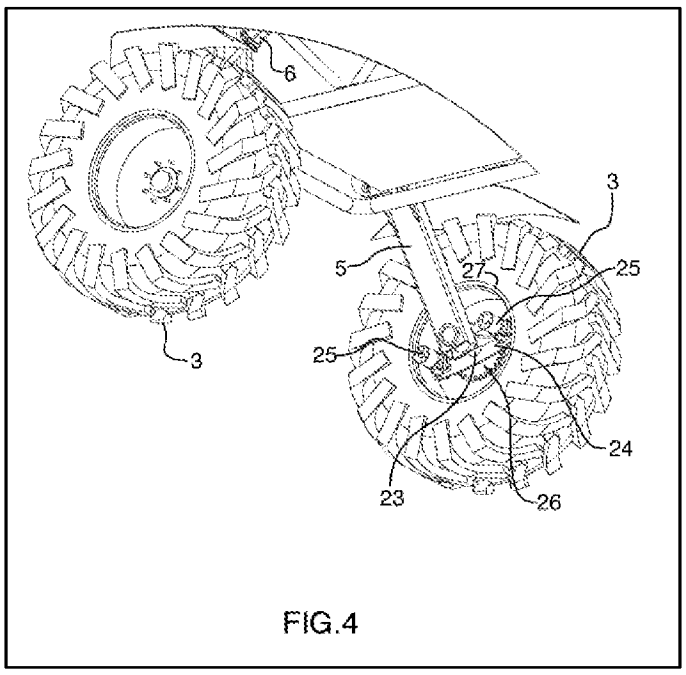


FIG.4

('425 Pat., Fig. 4.)

The '425 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." ('425 Pat., Col. 6:32-40.)

Fluid Pump: The '425 patent discloses a fluid pump that is mounted on the amphibious vehicle. ('425 Pat., Col. 2:66 – Col. 3:11.) 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.

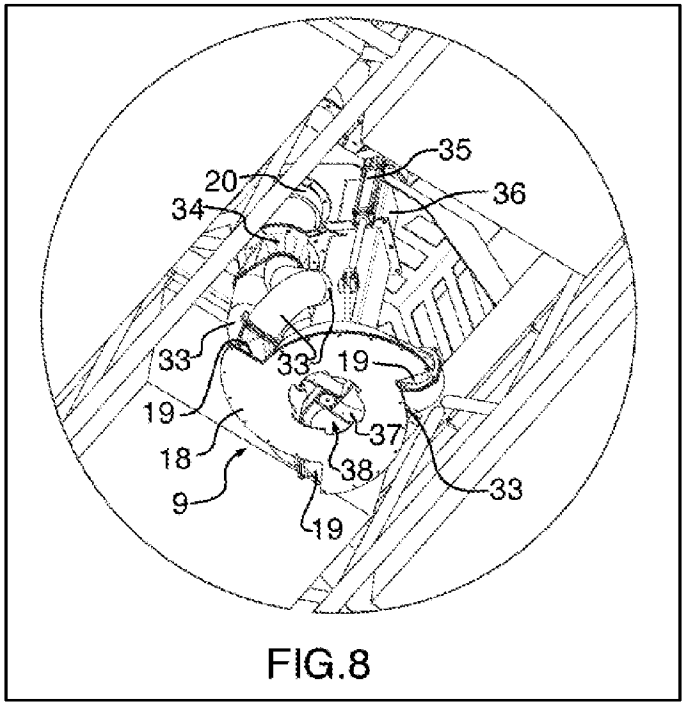


FIG.8

('425 Pat., Fig. 8.)

Referring to Figure 8, the '425 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." ('425 Pat., Col. 7:20-24.)

While the '425 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 '425 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." ('425 Pat., Col. 2:67 – Col. 3:6.) 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." ('425 Pat., Col. 1:25-26.)

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The ’425 patent also discloses a nozzle that is connected by a fluid conduit to the fluid pump. (’425 Pat., Col. 3:22-44.) The ’425 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.” (’425 Pat., Col. 3:22-24.) 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.” (’425 Pat., Col. 3:27-29.)

The ’425 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.

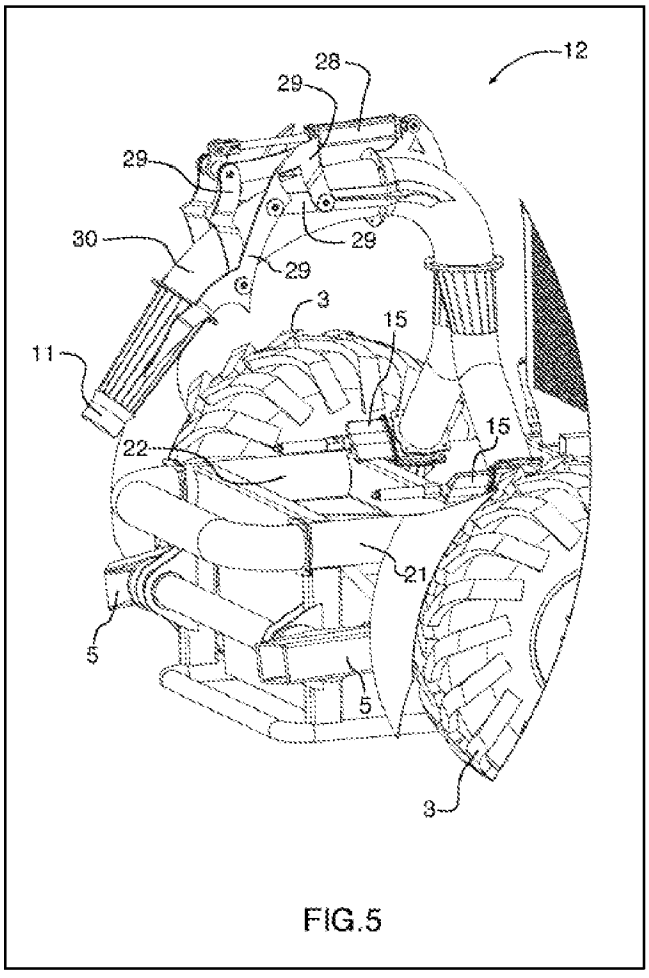


FIG.5

(’425 Pat., Fig. 5.)

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Referring to Figure 5 above, the '425 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." ('425 Pat., Col. 6:50-52.)

Power Source: The '425 patent explains that the power source may include an internal combustion engine, for example a diesel engine, mounted to the vehicle body. ('425 Pat., 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" ('425 Pat., Col. 5:38-41), as shown in Figure 7:

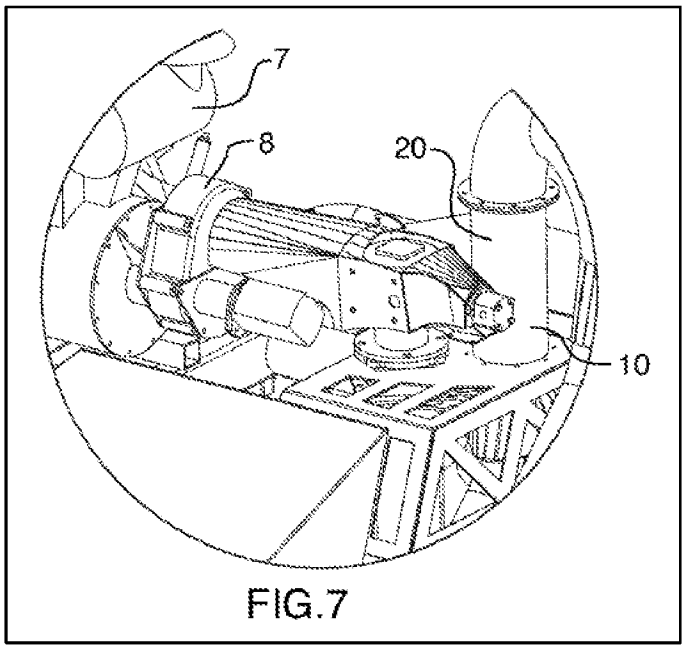


FIG.7

('425 Pat., Fig. 7.)

The '425 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." ('425 Pat., Col. 2:44-47.) 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." ('425 Pat., Col. 2:51-54.)

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Remote Control: The '425 patent 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." ('425 Pat., Col. 4:32-34.) The '425 patent explains that "[t]he vehicle may be remotely controllable by an operator remote from the vehicle . . . ." ('425 Pat., Col. 4:34-37.) The '425 patent further explains that "[t]he remote control structure may be configured to control an amount of fluid flow from at least the first nozzle." ('425 Pat., Col. 4:41-43.) The remote control structure allows the operator to control vehicle speed and direction on land or when floating. ('425 Pat., Col. 4:34-37.)

As the Request shows, the solution disclosed in the '425 patent to the problem the '425 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 '425 patent.

B. Prosecution History

The U.S. Patent Application No. 17/590,125 that led to the grant of the '425 patent was filed on February 1, 2022. The application No. 17/590,125 is a continuation of application No. 17/201,100, filed on March 15, 2021, which is a continuation of application No. 16/891,627, filed on June 3, 2020, which 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, which claims the benefit of Provisional application No. 61/867,598, filed on August 19, 2013. The prosecution history for the '425 patent is attached hereto as Exhibit F.

Applicant filed the application that led to the '425 patent on February 1, 2022. The application requested Track I Prioritized Examination under 37 CFR § 1.102(e)(1). (Application,

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Feb. 1, 2022.) The Examiner granted the request for prioritized examination on April 7, 2022. (Decision Granting Request for Prioritized Examination, Apr. 7, 2022.)

Relevant to the prosecution of the '425 patent, Bazooka filed a Request for *Ex Parte* Reexamination for Applicant's U.S. Patent No. 10,974,557 ("the '557 patent") on May 6, 2022. (*See* Exhibit G.) The '557 patent is in the same patent family as the '425 patent (as its grandparent) and shares a common specification with the '425 patent. The '557 patent Reexamination Request pointed out key prior art that was not considered during the prosecution of the '557 patent and which rendered all claims of the '557 patent anticipated under AIA 35 U.S.C. § 102 and/or obvious under AIA 35 U.S.C. § 103, including U.S. Patent No. 7,478,817 to Carrier, U.S. Patent Application Publication No. 2014/0112093 to Puck, U.S. Patent No. 7,833,071 to Gaither, and U.S. Patent Application Publication No. 2014/0288763 to Bennett. (*See* Exhibit G.) On May 26, 2022, the USPTO granted the reexamination request and found that this prior art created a substantial new question of patentability with respect to all claims of the '557 patent. (*See* Exhibit H.) On August 12, 2022, a first office action issued in the *ex parte* reexamination for the '557 patent which rejected all thirteen claims under 35 U.S.C. § 102(a)(1) in view of Carrier II. (Exhibit H, at 18 (Office Action, Aug. 12, 2022).)

During the prosecution of the '425 Patent, the Examiner never commented on the prior art or issued ***any*** claim rejections. On April 22, 2022, the Examiner issued a Notice of Allowance allowing application claims 1-21. (Exhibit F, at 31 (Notice of Allowance, Apr. 22, 2022).) This Notice of Allowance stated only that "[t]he application identified above has been examined and is allowed for issuance as a patent." (Notice of Allowance, Apr. 22, 2022.) Following the first Notice of Allowance, Applicant filed an Information Disclosure Statement disclosing the '557 patent Reexamination Request as well as the prior art cited therein. (Exhibit F, at 13 (Information

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Disclosure Statement, May 9, 2022).) The Examiner acknowledge that the art submitted in the Information Disclosure Statement was considered and issued a second Notice of Allowance allowing claims 1-21 without comment. (Exhibit F, at 5 (Notice of Allowance, May 17, 2022).) The Examiner never substantively engaged with the prior art addressed in the Reexamination Request for the '557 patent. Crucially, the Examiner granted the second Notice of Allowance ***before*** the USPTO issued its decision granting *ex parte* reexamination for the '557 patent. (*Compare* Notice of Allowance, May 17, 2022, *with* Exhibit G, at 3.) The Examiner therefore never considered the USPTO's determination that the cited prior art created a substantial new question of patentability for the '557 patent.

As shown below with respect to Grounds 1-5, the substance of Applicant's allowed claims was disclosed in the prior art long before Applicant filed the application that led to the '425 patent. All the claims of the '425 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 1-7 and Claims 12-19 of the '425 patent are unpatentable under AIA 35 U.S.C. § 102 over U.S. Patent Application Publication No. 2012/0185129 to Carrier ("Carrier I").

Ground 2: Claims 1-21 of the '425 patent are unpatentable under AIA 35 U.S.C. § 103 over U.S. Patent Application Publication No. 2012/0185129 to Carrier I in view of U.S. Patent Application Publication No. 2014/0112093 to Puck.

Ground 3: Claims 1-8, Claim 10, and Claims 12-20 of the '425 patent are unpatentable under AIA 35 U.S.C. § 102 over U.S. Patent No. 7,478,817 to Carrier ("Carrier II").

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Ground 4: Claims 1-21 of the '425 patent are unpatentable under AIA 35 U.S.C. § 103 over U.S. Patent No. 7,478,817 to Carrier II in view of U.S. Patent Application Publication No. 2014/0112093 to Puck.

Ground 5: Claims 1-21 of the '425 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. Overview of Cited Prior Art

A. Review of U.S. Patent Application Publication No. 2012/0185129 to Carrier I

U.S. Patent Application Publication No. 2012/0185129 to Carrier ("Carrier I") is directed to a "multi-purpose all-terrain vehicle." (Carrier I, [0003].) Carrier I was filed December 11, 2008 and published July 19, 2012. The earliest effective priority date asserted for the '425 patent is August 19, 2013. Carrier is prior art under AIA 35 U.S.C. § 102(a). Carrier I was not before the Examiner during prosecution of the '425 patent. While Carrier I shares a common inventor with U.S. Patent No. 7,478,817 to Carrier II, discussed below, these references are in different patent families and do not share a common specification.

Carrier I teaches a "multi-purpose all-terrain vehicle" that is suitable for "amphibious operations" on both land and water. (Carrier I, [0003], [0079].) The amphibious vehicle of Carrier I is shown in Figure 1.

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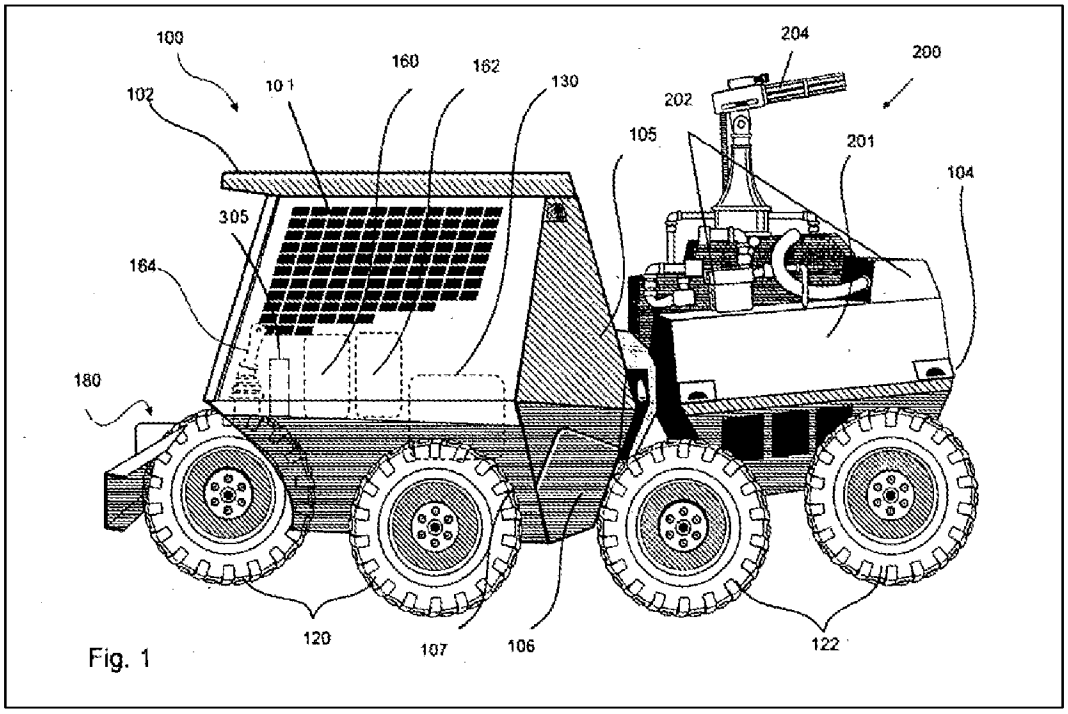


Fig. 1

(Carrier I, Fig. 1.)

Like the amphibious vehicle disclosed in the '425 patent, the amphibious vehicle of Carrier I is configured to operate on land and in water and is equipped with a fluid pump for pumping fluid directly out of a body of water. (Carrier I, [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"); [0063] ("pump 202 to refill the tank 201 from lakes, ponds, or streams").)

The amphibious vehicle disclosed in Carrier I is adapted to operate on both land and water. (Carrier I, [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"); [0079] ("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 . . . .").) While Carrier I discloses pumping water in connection with fighting

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fires, it is not limited to this use. Carrier also explains that the amphibious vehicle may pump, for example, water, foam, and dry chemical solutions. (*See* Carrier I, [0051].)

Like the '425 patent, Carrier I explains that the amphibious vehicle includes: a floatable vehicle body; a ground engaging propulsion structure; a fluid pump; a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump; and a remote control to control the fluid pump and the direction of the amphibious vehicle while it is in operation on land and in water. These structures will be addressed in turn:

Vehicle Body: Carrier I discloses a floatable vehicle body. The amphibious vehicle of Carrier I "includes a frame having a sealed hull to provide the vehicle with buoyancy." (Carrier I, [0026].) Carrier I teaches that "[t]he hull (bottom section) of the vehicle 100 can preferably be shaped in such a configuration as that of a boat" and that "[t]he 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 . . . ." (Carrier I, [0079].)

Ground Engaging Propulsion Structure: Carrier I teaches a ground engaging propulsion structure. Carrier explains that the ground engaging members may be wheels, "six and preferably eight wheels." (Carrier I, [0045].) Carrier I further teaches that the wheels 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 hydraulic system as is known in the art." (Carrier I, [0054].) Carrier I teaches that one hydraulic motor may power more than one wheel: "[I]ncluding a plurality of wheels which are operably connected to a hydraulic motor." (Carrier I, [0024].) Carrier I further teaches that the wheels may be connected to individual hydraulic motors. (Carrier I, [0039] ("a plurality of wheels 120 and 122 . . . which can each preferably be operably connected to a hydraulic or other propel means wheel motor 124 and 126").) Carrier I's hydraulic propulsion system allows

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each wheel to be independently driven at variable speeds. (Carrier I, [0039]-[0042].) Figures 5-7 of Carrier I provide separate hydraulic schematics for operating at low speed, mid speed, and high speed, respectively. (Carrier I, Figs. 5-7, [0033]-[0035].)

Fluid Pump: Carrier I teaches a fluid pump. (*See* Carrier I, [0050] (referencing "dual engine pumps"), [0051] (referencing "quick release pump systems").) Carrier I explains that it is "equipped with a pump for providing various pressure and volume outputs to shoot sufficient volumes of water." (Carrier I, [0052].) 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 I, [0061].) Carrier I explains that the fluid pump is capable of pumping numerous liquids: ("The water cannon is as well capable to shoot streams of water . . . foam, dry chemical, or decon [decontamination] solutions in any combination." (Carrier I, [0059]; *see also id.* (referencing "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 . . . .").) Carrier I also discloses a filter for filtering out debris that would otherwise clog the pump. (Carrier I, [0063] ("a screen to filter out debris that would otherwise clog hoses").)

Carrier I explains that a fluid nozzle is connected to the fluid pump by a fluid conduit, *e.g.*, hose: "[F]ire fighting equipment 200 including . . . dual engine pumps 202 and hoses with nozzles 204 all of which are operatively interconnected." (Carrier I, [0050].)

Power Source: Carrier I discloses a power source that can power the amphibious vehicle and the fluid pump. It explains that the hydraulic pump is powered by a diesel engine:

> 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

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> engine 130 can be a relatively low horsepower diesel unit, such as 166 horse power (124 KW) (a 3500 RPM FPT (Fiat Power Train) diesel engine.

(Carrier I, [0039].)

The fluid pump is also powered by the vehicle's power source. (Carrier I, [0051] ("The fighting equipment 200 can be self powered (i.e., dual engines 202) or can be powered by the vehicle engine 130.").)

Remote Control: Carrier I discloses a remote control that can control both the vehicle and the fluid pump when the vehicle is in operation on land and in water. Carrier I explains: "[T]he *operations of each unit described herein* can be performed by remote control as part of processor 160." (Carrier I, [0064] (emphasis added).) Carrier I teaches, for example, that the vehicle's "steering, braking, engine, [and] transmission" may be remotely controlled. (Carrier I, [0065].) Carrier I also teaches that the remote control can control the flow of water from the fluid pump: "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 . . . ." (Carrier I, [0059].)

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 '425 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 '425 patent, it is proper to 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

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discussed more fully with respect to Grounds 2, 4, and 5 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 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 '425 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

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> 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.

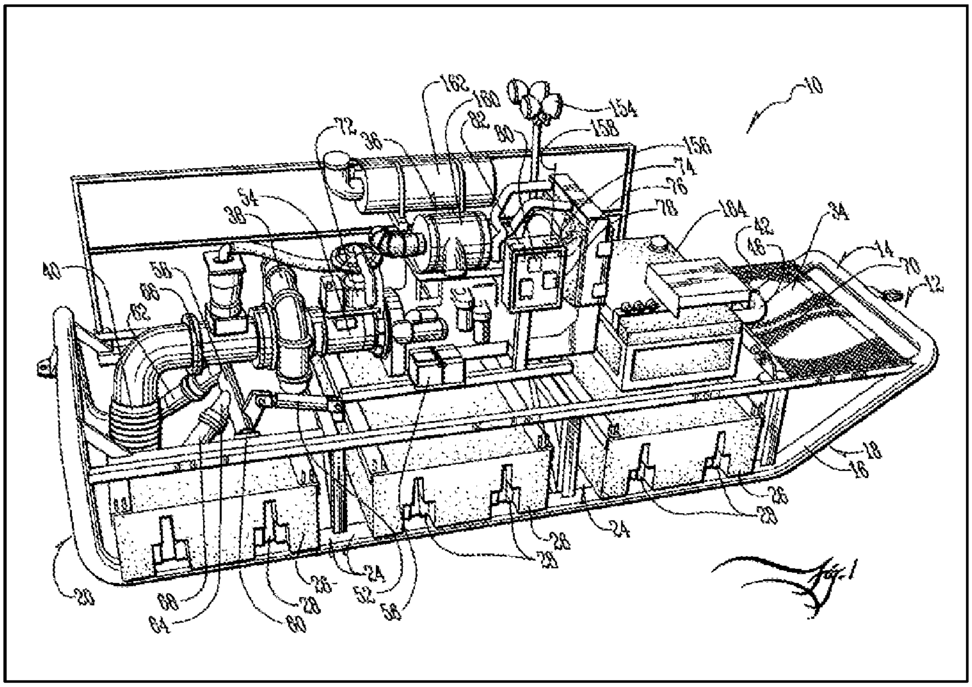
> It would, therefore, be desirable to provide a vehicle which floats on the manure pond and which is maneuverable. It would also be desirable to provide the vehicle with multiple outlet nozzles to direct the fluid downward into the lagoon a sufficient distance to agitate the solids in the bottom of 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].)

Puck discloses a manure agitator comprising a vehicle body, a power source, a fluid pump for pumping liquid manure, and a remote control to control the flow of fluid from the fluid pump and the speed and direction of the manure agitator. These structures will be addressed in turn.

Vehicle Body: 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.

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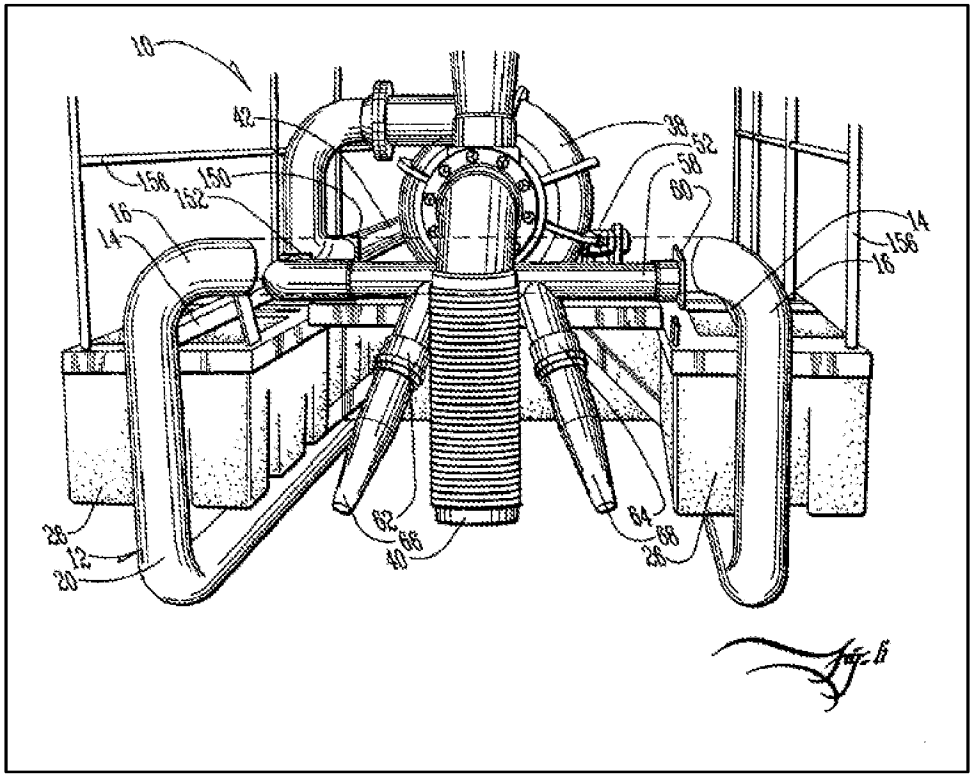


(Puck, Fig. 1.)

Fluid Pump: 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).

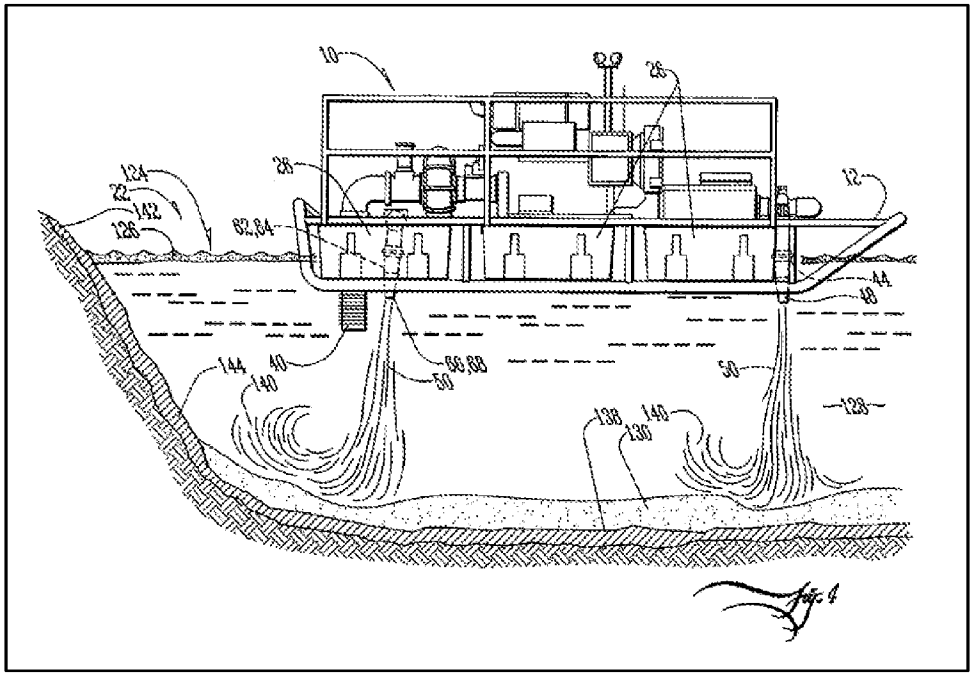
(Puck, [0026]; *see also* [0027].) The fluid pump 38 is depicted in Figure 6.



(Puck, Fig. 6.)

Puck also discloses a plurality of fluid nozzles. 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.)

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].)

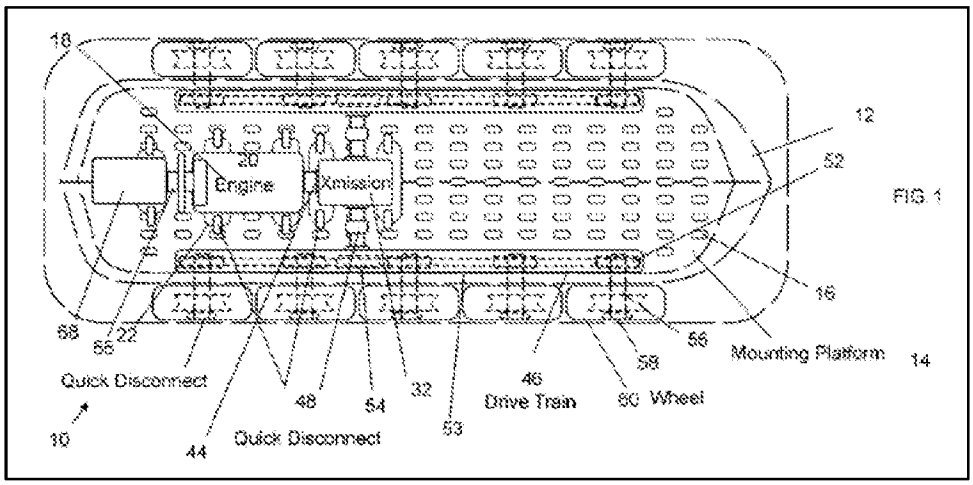
While Puck discloses the solution of using a floating manure agitator to agitate manure ponds, Puck does not address the additional problems of exiting a floating vehicle from a manure pond and transporting the floating vehicle between manure ponds. These problems are addressed through the combination of Puck with amphibious pumping vehicles. As detailed more fully with respect to Grounds 2, 4, and 5 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 I, Carrier II, and Bennett, to arrive at the invention of the '425 patent.

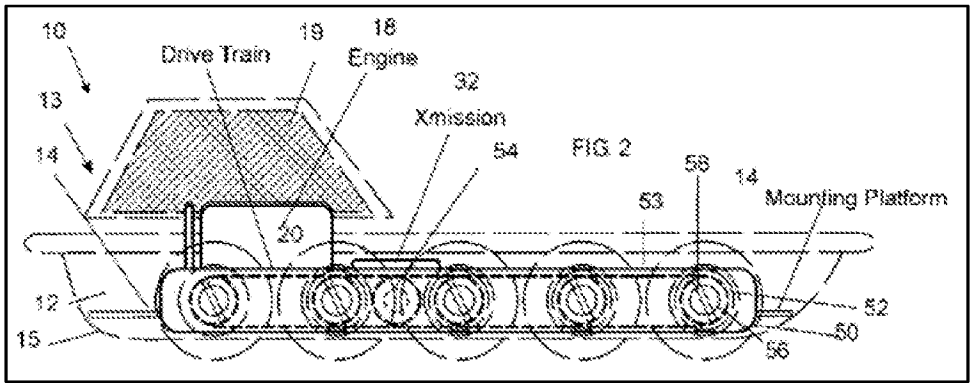
C. Review of U.S. Patent No. 7,478,817 to Carrier II

U.S. Patent No. 7,478,817 to Carrier ("Carrier II") is directed to a "multi-purpose all-terrain vehicle." (Carrier II, Col. 1:10-11.) Carrier II was filed August 15, 2005 and issued January 20, 2009. The earliest effective priority date asserted for the '425 patent is August 19, 2013. Carrier II is prior art under AIA 35 U.S.C. § 102(a). While Carrier II was before the Examiner during prosecution of the '425 patent, it is proper to re-consider Carrier II 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 3-4 below. *See* 35 U.S.C. § 303(a); MPEP § 2216. While Carrier II shares a common inventor with Carrier I, discussed above, these references are in different patent families and do not share a common specification.

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





(Carrier II, Figs. 1-2.)

Carrier II is specifically "equipped for quick exchange of all its functional components . . . ." (Carrier II, Col. 2:7-8.) Like the amphibious vehicle disclosed in the '425 patent, the amphibious vehicle of Carrier II 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 II, 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 II is adapted to operate on both land and water.

(Carrier II, Col. 5:62-65 ("[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 II discloses pumping water in connection with fighting fires, it is not limited to this use. Carrier II also explains that the amphibious vehicle may pump, for example, water, foam, and decontamination solutions. (Carrier II, Col. 5:22-23.)

Like the '425 patent, Carrier II explains that the amphibious vehicle includes: a floatable vehicle body; a ground engaging propulsion structure; a fluid pump; a fluid nozzle; a power source configured to provide power to both the ground engaging propulsion structure and the fluid pump; and a 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: Carrier II 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 II, Col. 3:8-10, 26-28.) Carrier II's floatable vehicle body is depicted, for example, in Figures 3, 4A, and 4B.

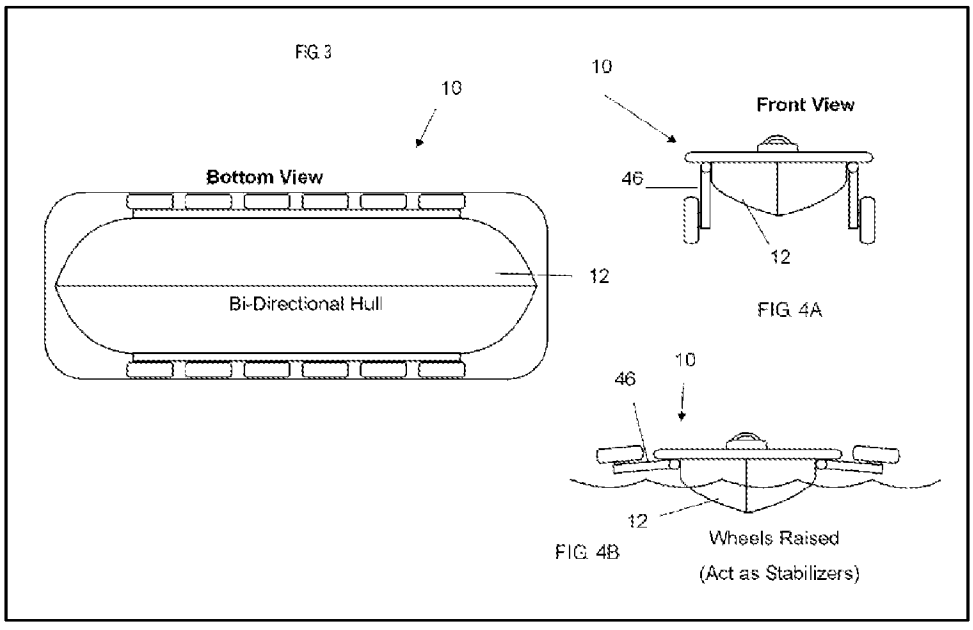


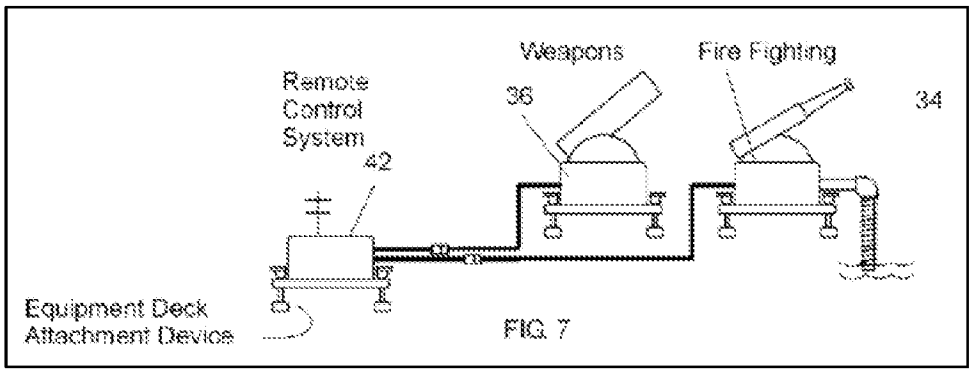
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(Carrier II, Figs. 3; 4A; 4B.)

Ground Engaging Propulsion Structure: Carrier II also teaches a ground engaging propulsion structure. Carrier explains that the ground engaging members may be wheels or tracks. (Carrier II, 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 II, Col. 3:32-33.)

Carrier II 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 II, Col. 6:41-44.) Carrier II'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 II, Col. 7:5-8; *see also* Col. 7:51-54 (disclosing variable speed transmission).)

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



(Carrier II, Fig. 7.)

Carrier II explains that it is "equipped with a pump for providing various pressure and volume outputs to shoot sufficient volumes of water." (Carrier II, Col. 8:46-47.) It explains: "The

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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 II, Col. 10:51-53.) Carrier II 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 II, 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 II also discloses a filter for filtering out debris that would otherwise clog the pump. (Carrier II, Col. 10:64-67 ("a screen to filter out debris that would otherwise clog hoses").)

Carrier II 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 II, Col. 9:3-4.) Carrier II 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 II, Col. 9: 61-62.) Carrier II also explains that the nozzle is a separate structure from the fluid conduit and discloses a plurality of nozzles:

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

Power Source: Carrier II 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

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power plant), engine unit 18, (that can be P-8 compatible, gasoline, diesel, hybrid-electric, propane, natural gas or a combination thereof)." (Carrier II, Col. 4:33-36.) The pump can be powered by the vehicle's power source: "The unit 34 can be powered by the vehicle engine unit 18." (Carrier II, Col. 5:40-42.)

Remote Control: Carrier II 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 II 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 II, Col. 11:5-8 (emphasis added).) Carrier II teaches that the remote control unit "enable[es] the vehicle 10 to be remotely controlled . . . ." (Carrier II, Col. 11: 12.) Carrier II further explains that "[t]he water cannon . . . can be remotely controlled either wirelessly or wired in manned, unmanned and autonomous modes." (Carrier II, Col. 10:31-35.)

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 '425 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 '425 Patent, it is proper to 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 5 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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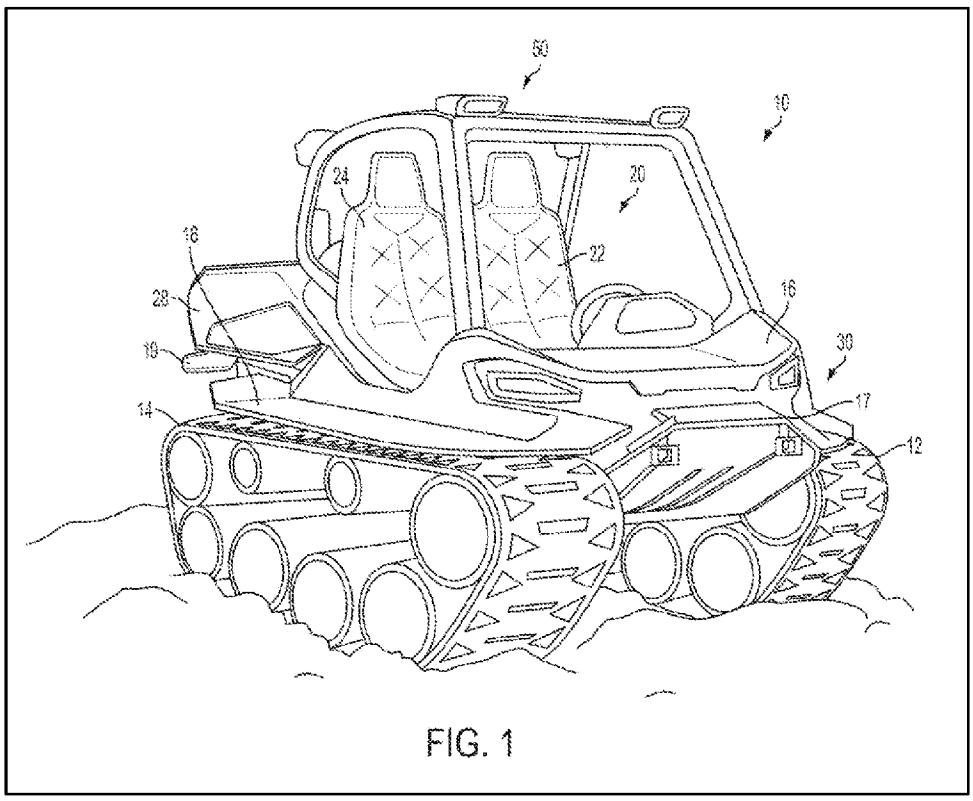


FIG. 1

(Bennett, Fig. 1.)

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 during prosecution of the '557 patent, which shares a common specification with the '425 patent and to which the '425 patent claims priority, "Bennett teaches a remote control for land and water (paragraphs 0043, 0121)." (Exhibit I, at 31 ('557 Pat., Final Office Action, February 1, 2021).)

Like the '425 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]).

As detailed more fully with respect to Ground 5 below, a person of ordinary skill in the art would have combined the amphibious vehicle of Bennett with the manure agitation boat of Puck.

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

A. Ground 1 (Carrier I): Detailed Prior Art Application to Claims 1-7 and Claims 12-19

Claims 1-7 and Claims 12-19 of the '425 patent are unpatentable under AIA 35 U.S.C. § 102 because every limitation of such claims is disclosed in Carrier I. These claims are reproduced below, including citations to Carrier I indicating where each limitation is taught. A claim chart detailing this ground of invalidity is attached hereto as Exhibit J.

1. *Claim 1*

Carrier I discloses all the limitations of Claim 1:

"An amphibious vehicle (Carrier I, [0003], [0058], [0074], [0079]) comprising:

a floatable vehicle body (Carrier I, [0026], [0079]);

ground engaging propulsion structure (Carrier I, [0045]) comprising a plurality of ground engaging elements (*id.*) powered by a hydraulic motor (Carrier I, [0024], [0039]-[0042], [0054]);

a fluid pump (Carrier I, [0050]-[0052], [0061]) for pumping liquid manure;

a power source connected to a hydraulic pump (Carrier I, [0039]), the power source configured to provide power to both the ground engaging propulsion structure (*id.*) and the fluid pump (Carrier I, [0051]); and,

a wireless remote control (Carrier I, [0059], [0064]) configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure (Carrier I,

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[0064], [0065]); (2) control a flow of liquid manure from the fluid pump (Carrier I, [0059]); (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging (Carrier I, [0064], [0065]); and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating (Carrier I, [0064], [0065]).”

To the extent it is determined that that Carrier I does not disclose a pumping system “for pumping liquid manure,” or a remote control “to control a flow of liquid manure” from the fluid pump, these are statements of intended use in Claim 1 and not structural limitations. *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. In the reexamination of Applicant’s related ’557 patent, the Examiner determined that “the type of material pumped is intended use.” (Exhibit H, at 21 (Office Action, Aug. 12, 2022).) The same holds true for the ’425 patent.

The title of the ’425 patent is “Amphibious Pumping Vehicle,” and the “Technical Field” explains that “[t]he invention relates to pumps and vehicles equipped for pumping.” (’425 Pat., Col. 1:25-26.) There is nothing in the specification of the ’425 patent that suggests that the claimed fluid pump has a special or distinct structure that is required for pumping liquid manure. The ’425 patent does not teach that the fluid pump must have a specific structure for pumping liquid manure.

For example, the specification of the ’425 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.

(’425 Pat., Col. 2:66 – Col. 3:6.)

The specification of the ’425 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.

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

Nothing in the specification of the '425 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.

Likewise, nothing in the specification of the '425 patent provides any additional structure that would require the remote control "to control a flow of liquid manure" from the fluid pump. The specification states only: "The remote control structure may be configured to control an amount of fluid flow from at least the first nozzle." ('425 Pat., Col. 4:41-43.) The specification also provides:

> 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.

('425 Pat., Col. 8:5-11.)

There is no associated structure that is required "to control a flow of liquid manure" (as opposed to a flow of fluid) from the fluid pump. This too is 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

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

The same holds true for the '425 Patent. The language "for pumping liquid manure" and "to control a flow of liquid manure" does not describe any specific structure of the fluid pump or remote control system. It simply provides intended uses. Carrier I's disclosure of a fluid pump and remote control system thus meets these limitations.

2. *Claim 2*

Carrier I discloses the additional limitations of Claim 2:

"The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump (Carrier I, [0050])."

3. *Claim 3*

Carrier I discloses the additional limitations of Claim 3:

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"The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof (Carrier I, [0052])."

Carrier I discloses that the fluid conduit (hose) may have quick connect end couplings to connect it to the fluid pump, which necessarily includes the presence of an opening at its end. (Carrier I, [0052].) Moreover, a conduit (hose) for pumping a fluid must have an opening at its end. Based on the teaching of Carrier, a person of ordinary skill in the art at the time of the invention would understand that the conduit would necessarily have an opening at its ends in order to connect to the fluid pump and discharge fluid.

4. *Claim 4*

Carrier I discloses the additional limitations of Claim 4:

"The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening (Carrier I, [0059])."

5. *Claim 5*

Carrier I discloses the additional limitations of Claim 5:

"The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier I, [0050])."

6. *Claim 6*

Carrier I discloses the additional limitations of Claim 6:

"The vehicle of claim 2, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier I, [0050])."

7. *Claim 7*

Carrier I discloses the additional limitations of Claim 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 (Carrier I, [0058], [0079]; *see also* [0049])."

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Carrier I explains that the amphibious vehicle "is designed to be drivable . . . through deep water" and that "[t]o achieve this effect, the vehicle can be relatively lightweight, having eight, ten or twelve-wheel drive or more, which can preferably be sealed against water intrusion." (Carrier I, [0058].) Carrier I further explains that the vehicle "can facilitate amphibious operations" including "eliminating water drag on the vehicle as it moves through the water" and "significantly enhanc[ing] both the movement directional speed i.e. forward or reverse and significantly enhance[ing] the turning capabilities left or right." (Carrier I, [0079].) The movement of the amphibious vehicle of Carrier I is controlled by the wheels. (Carrier I, [0058].) Under the broadest reasonable interpretation of the term, the wheels are a fluid mover. Additionally, Carrier I discloses a "propulsion pump[]" which is also a fluid mover under the broadest reasonable interpretation of that term. (Carrier I, [0049].) The propulsion pump controls the speed and direction of the vehicle of Carrier I when the vehicle is floating.

8. *Claim 12*

Carrier I discloses the additional limitations of Claim 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 (Carrier I, [0026], [0039], [0051])."

Carrier I explains: "[T]he hydraulic pump . . . [is] operably connected to an engine 130." (Carrier I, [0039].) A person of ordinary skill in the art at the time of the invention would understand that a mechanical means would be necessarily present in such operable connection. Carrier I likewise explains that "[t]he [fire]fighting equipment 200 . . . can be powered by the vehicle engine 130 through stacked hydrostatic PTO (Power Take Off) . . . drive systems." (Carrier I, [0051].) The firefighting equipment includes the fluid pump. (*See* Carrier, [0050].)

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9. *Claim 13*

Carrier I discloses all the limitations of Claim 13:

"The vehicle of claim 12, wherein the wireless remote control (Carrier I, [0064], [0065]) is configured to operate the hydraulic motor to operate the ground engaging propulsion structure at variable speed (Carrier I, [0039]-[0042], [0045], [0054])."

10. *Claim 14*

Carrier I discloses the additional limitations of Claim 14:

"The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels (Carrier I, [0039], [0045], [0054])."

11. *Claim 15*

Carrier I discloses the additional limitations of Claim 15:

"The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels (Carrier I, [0039], [0045], [0054])."

12. *Claim 16*

Carrier I discloses the additional limitations of Claim 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 (Carrier I, [0039]-[0042], [0045], [0054])."

13. *Claim 17*

Carrier I discloses the additional limitations of Claim 17:

"The vehicle of claim 16, wherein the wheels are operable at variable speed by the hydraulic motor (Carrier I, [0039]-[0042], [0045], [0054])."

14. *Claim 18*

Carrier I discloses the additional limitations of Claim 18:

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"The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier I, [0050])."

15. *Claim 19*

Carrier I discloses the additional limitations of Claim 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 (Carrier I, [0058], [0079]; *see also* [0049])."

As discussed above with respect to Claim 7, the wheels and/or propulsion pump of Carrier I are a fluid movers under the broadest reasonable interpretation of that term.

B. Ground 2 (Carrier I in view of Puck): Detailed Prior Art Application to Claims 1-21

Claims 1-21 of the '425 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 I in view of Puck. A claim chart detailing this ground of invalidity is attached hereto as Exhibit K.

As discussed with respect to Ground 1 above, Carrier I discloses all limitations of Claims 1-7 and Claims 12-19 of the '425 patent. The combination of Carrier I and Puck discloses the additional limitations of Claims 8-11 and Claims 20-21 of the '425 patent.

While Puck was before the Examiner during prosecution of the '425 patent, it is apparent from the prosecution history that the Examiner did not consider the full scope of Puck. *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

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way that escaped review during earlier examination."); *see also Ex parte Rozman*, 2021 Pat. App. LEXIS 4649, at *5-6.

During prosecution of the '425 Patent, the Examiner never issued a claim rejection over Puck, or specifically applied Puck to the claims at issue. The Examiner made no comment on Puck during prosecution. Indeed, the Examiner never issued ***any*** claim rejections at all during prosecution of the '425 Patent. As the Federal Circuit and PTAB have determined, the present SNQ presents this reference in a new light because Puck never formed the basis of a rejection during prosecution and were never considered in the manner in which they are presented in the SNQ. *See In re Swanson,* 540 F.3d at 1379-80; *Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13; *Ex parte Invista N. Am., S.A.R.L.*, 2016 Pat. App. LEXIS 12692, *10; *see also Ex parte Omega Patents, LLC*, 2019 Pat. App. LEXIS 11432, at *10; *Ex parte Apple Inc.*, 2016 Pat. App. LEXIS 8496, at *13-14. Additionally, the Examiner issued the second Notice of Allowance without comment for the '425 Patent ***before*** the USPTO found a substantial new question of patentability and granted the '557 patent Reexamination Request. The SNQ finding for the '557 patent, at least, presents Puck in a new light with respect to the patentability of the '425 patent, and Puck is properly considered here. *See* 35 U.S.C. § 303(a); MPEP § 2216.

To the extent it is determined that Carrier I does not disclose a fluid pump for pumping liquid manure or a remote control to control a flow of liquid manure, and these statements of intended use are determined to be required structural limitations, they are disclosed by Puck, which is especially adapted for pumping liquid manure and discloses a remote control for controlling a flow of liquid manure. The "technical field" for the '425 patent is "pumps and vehicles equipped for pumping." ('425 Pat., Col. 1:25-26.) It further specifies that "[i]n particular, the invention relates to manure pumps and amphibious vehicles equipped for pumping liquid manure." ('425

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Pat., Col. 1:26-28.) A person of ordinary skill in the art at the time of the invention would have looked to the teachings of Carrier I and Puck when attempting to solve the problem addressed by the '425 patent, namely, the efficient agitation of manure ponds without having to move shore devices or complex guide wires to reach the entire pond.

Carrier I, a multi-purpose amphibious pumping vehicle, and Puck, a floating manure agitator, are analogous art to the '425 patent. Here, both Carrier I 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 '425 patent and they are reasonably pertinent to the problem addressed by the invention of the '425 patent. During prosecution of the '557 patent, which shares a common specification with the '425 patent and to which the '425 patent claims priority, the Examiner cited Puck, which also demonstrates that it is analogous art. (*See* '557 Pat., Non-Final Office Action, September 14, 2020, at p. 2.) The Examiner also cited other amphibious vehicles such as U.S. Patent No. 5,176,098 to Royle ("Royle") during prosecution of the '557 patent. Applicant did not challenge the Examiner's determination that Puck or other amphibious vehicles were analogous art, nor did Applicant challenge the motivation of a person of ordinary skill in the art to combine Puck with amphibious vehicles. (*See* '557 Pat., 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 vehicle of Carrier I 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 I, 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 remotely agitate manure lagoons would have naturally looked to the teachings of other vehicles, such as Puck, that are adapted for pumping liquid manure and disclose

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remote controls for remotely agitating manure lagoons. 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 I, which were already adapted for use in water and on land.

In fact, Applicant has admitted that prior art manure agitation boats (which include Puck) suffered from drawbacks such as an inability to exit a manure pond. In its Complaint in the underlying litigation disclosed above, Applicant pled:

> 18. While other agitation boat devices were introduced to the market, they had numerous drawbacks that the Patent-in-Suit overcame. For example, the Lagoon Crawler made it easier for the vehicle to enter and exit the lagoon. A typical lagoon has a berm that requires navigation both up and then back down. Prior art designs required a trailer to launch the boat. Compounding this difficulty was the fact that the terrain around a lagoon is often muddy and wet. Indeed, a typical problem with the prior art boats was that they would get stuck on the bank or enter the lagoon too quickly and nosedive under the liquid.
>
> 19. Relatedly, prior art designs were often ineffective in exiting the lagoon, either because they got stuck in the mud at the bottom of the lagoon or got stuck on "islands" of solid buildup in the lagoon. This could lead to safety concerns when a tractor used chains to pull the boat from the lagoon. If the boat was stuck in the mud, the chains were known to break, endangering the drivers of the tractors.

(Exhibit L, at ¶¶ 19-20.)

One of ordinary skill in the art would naturally look to solve this problem by combining prior art manure agitation boats, such as Puck, with amphibious vehicles, such as Carrier I, that would be capable of entering and exiting a manure pond. 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.

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During prosecution of the '557 patent, the Examiner found that other amphibious vehicles in combination with Puck "combine[] known features to achieve predictable results." ('557 Pat., Non-Final Rejection, September 14, 2020 at pp. 2-3.) The Applicant did not challenge this combination. (*See* '557 Pat., Amendment/Response, January 14, 2021, at p. 8.) The same reasoning applies with equal force to the combination of the amphibious vehicle of Carrier I with Puck. The combination of the amphibious pumping vehicle of Carrier I with the fluid pump of Puck for pumping liquid manure according to known methods would yield the predictable result of a remotely-controlled amphibious pumping vehicle that is capable of pumping liquid manure.

1. *Claim 1*

As discussed in Ground 1 above, Carrier I discloses all limitations of Claim 1. However, to the extent it is determined that Carrier I does not disclose a fluid pump "for pumping liquid manure" or a remote control structure to control "a flow of liquid manure," and these statements are determined to be required structural limitations, they are disclosed by Puck. Faced with the problem of remotely 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, and a remote control for controlling that pump, 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 '425 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].)

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Puck's description of the advantages of using a pumping system for pumping liquid manure is strikingly similar to the advantages described in the '425 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 I, Puck also discloses the following limitations of Claim 1: a floatable vehicle body (Puck, Abstr., [0001], [0006], [0008], Fig. 1); a fluid pump for pumping liquid manure (Puck, [0006], [0026], [0027], Fig. 6); a power source configured to provide power to the fluid pump (Puck, [0024], [0025]); and a remote control system to control the flow of fluid from the fluid pump and the speed and direction of the vehicle (Puck, [0009], [0011], [0027], 0035], [0037]). 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 I with the manure agitator of Puck to create the invention of Claim 1.

2. *Claims 2-7*

As shown with respect to Ground 1 above, Carrier I discloses all the limitations of Claims 2-7. The addition of Puck is not necessary to meet all limitations of these claims. However, the combination of Carrier I and Puck is presented in the alternative to the extent it is determined that Carrier I does not disclose all limitations of these claims.

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To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 2, Puck discloses a conduit fluidly connected to the fluid pump. (Puck, [0011], [0027], [0035], Figs. 4-6.)

To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 3, Puck discloses a conduit comprising an opening at an end thereof. (Puck, [0027].)

To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 4, Puck discloses a wireless remote control configured to control an orientation of the opening. (Puck, [0027], [0033], [0035], [0037], Fig. 7.)

To the extent it is determined that Carrier I does not disclose the additional limitations of Claims 5 and 6, Puck discloses a nozzle at the end of the conduit. (Puck, [0008], [0027], [0029], [0033], Figs. 4-6.)

To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 7, Puck discloses a fluid mover controlling at least one of speed and direction of the vehicle when the vehicle is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].)

3. *Claim 8*

Puck discloses the additional limitations of Claim 8:

"The vehicle of claim 1, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0027], [0029], Fig. 4, Fig. 6)."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

4. *Claim 9*

Puck discloses the additional limitations of Claim 9:

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"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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Fig. 7)."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

5. *Claim 10*

Puck discloses the additional limitations of Claim 10:

"The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0027], [0029], Fig. 4, Fig. 6)."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

6. *Claim 11*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0009], [0011], [0032], [0033], [0035], [0037])."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

7. *Claim 12*

As shown with respect to Ground 1 above, Carrier I discloses all the limitations of Claim 12. The addition of Puck is not necessary to meet all limitations of this claim. However, the

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combination of Carrier I and Puck is presented in the alternative to the extent it is determined that Carrier II does not disclose all limitations of this claim.

To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 12, Puck discloses a power source connected to the hydraulic pump by a mechanical drive and connected to the fluid pump by the mechanical drive. (Puck, [0011] ("A slurry pump is coupled to the power source."), [0024], [0025] ("Coupled to the power source (36) is a liquid manure pump . . . ."), [0027].)

8. *Claims 13-18*

As shown with respect to Ground 1 above, Carrier I discloses all the limitations of Claims 13-18. The addition of Puck is not necessary to meet all limitations of these claims.

9. *Claim 19*

As shown with respect to Ground 1 above, Carrier I discloses all the limitations of Claim 19. The addition of Puck is not necessary to meet all limitations of this claim. However, the combination of Carrier I and Puck is presented in the alternative to the extent it is determined that Carrier I does not disclose all limitations of this claim.

To the extent it is determined that Carrier I does not disclose the additional limitations of Claim 19, Puck discloses a fluid mover controlling at least one of speed and direction of the vehicle when the vehicle is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].)

10. *Claim 20*

Puck discloses the additional limitations of Claim 20:

"The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0011], [0027], [0029], [0035], [0037], Fig. 4, Fig. 6)."

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As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

11. *Claim 21*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Fig. 7)."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier I and Puck to arrive at the claimed invention of the '425 patent.

C. Ground 3 (Carrier II): Detailed Prior Art Application to Claims 1-8, Claim 10, and Claims 12-20

Claims 1-8, Claim 10, and Claims 12-20 of the '425 patent are unpatentable under AIA 35 U.S.C. § 102 because every limitation of such claims is disclosed in Carrier II. These claims are reproduced below, with citations to Carrier II indicating where each limitation is taught. A claim chart detailing this ground of invalidity is attached hereto as Exhibit M.

While Carrier II was before the Examiner during prosecution of the '425 patent, it is apparent from the prosecution history that the Examiner did not consider the full scope of Carrier II, which discloses every element of Claims 1-8, Claim 10, and Claims 12-20 of the '425 patent as shown below. *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

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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.

During prosecution of the '425 Patent, the Examiner never issued a claim rejection over Carrier II, or specifically applied Carrier II to the claims at issue. The Examiner made no comment on Carrier II during prosecution. Indeed, the Examiner never issued ***any*** claim rejections at all during prosecution of the '425 Patent. As the Federal Circuit and PTAB have determined, the present SNQ presents this reference in a new light because Carrier II never formed the basis of a rejection during prosecution and were never considered in the manner in which they are presented in the SNQ. *See In re Swanson,* 540 F.3d at 1379-80; *Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13; *Ex parte Invista N. Am., S.A.R.L.*, 2016 Pat. App. LEXIS 12692, *10; *see also Ex parte Omega Patents, LLC*, 2019 Pat. App. LEXIS 11432, at *10; *Ex parte Apple Inc.*, 2016 Pat. App. LEXIS 8496, at *13-14. Additionally, the Examiner issued the second Notice of Allowance without comment for the '425 Patent ***before*** the USPTO found a substantial new question of patentability with respect to Carrier II and granted the '557 patent Reexamination Request. The SNQ finding for the '557 patent, at least, presents Carrier II in a new light with respect to the patentability of the '425 patent, and Carrier II is properly considered here. *See* 35 U.S.C. § 303(a); MPEP § 2216.

1. *Claim 1*

Carrier II discloses all the limitations of Claim 1:

"An amphibious vehicle (Carrier II, Col. 1:10-16, Col 1:37-41, Col. 1:66-67) comprising:

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

ground engaging propulsion structure (Carrier II, Col. 3:25-38) comprising a plurality of ground engaging elements (*id.*) powered by a hydraulic motor (Carrier II, Col. 6:41 – Col. 7:11, Col. 7:46-54);

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

a power source connected to a hydraulic pump (Carrier II, Col. 4:33-40, Col. 5:40-43, Col. 6:41-54, Col. 6:60 – Col. 7:5, Col 8:54-58), the power source configured to provide power to both the ground engaging propulsion structure (Carrier II, Col. 5:40-46, Col. 5:53-56) and the fluid pump (Carrier II, Col. 8:45-47, Col. 9:54-56); and,

a wireless remote control (Carrier II, Col. 11:5-16, Fig. 7) configured to enable an operator who is remote from the vehicle to: (1) control the ground engaging propulsion structure (Carrier II, Col. 11:5-16, Col. 11:47-53); (2) control a flow of liquid manure from the fluid pump (Carrier II, Col. 10: 2-5, Col 10:31-35); (3) control at least one of the speed and direction of the vehicle when the vehicle is ground engaging (Carrier II, Col. 11:5-16, Col. 11:47-53); and, (4) control at least one of the speed and direction of the vehicle when the vehicle is floating (*id.*)."

As discussed with respect to Ground 1 above, to the extent it is determined that that Carrier II does not disclose a pumping system "for pumping liquid manure," or a remote control "to control a flow of liquid manure" from the fluid pump, these are statements of intended use in Claim 1 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 II's disclosure of a fluid pump and a remote control system for controlling that pump is therefore sufficient. *See* MPEP § 2114 (manner of operating a device does not differentiate an apparatus claim from the prior art). In fact, when considering the Carrier II reference in the reexamination of Applicant's related '557 patent, the Examiner determined that "the type of material pumped is intended use and the Carrier device is clearly capable of pumping manure." (Exhibit H, at 21 (Office Action, Aug. 12, 2022).) The same holds true for the '425 patent.

2. *Claim 2*

Carrier II discloses the additional limitations of Claim 2:

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"The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump (Carrier II, Col. 4:14-32, Col. 5:19-40, Col. 8:45-53, Col. 9:13-30, Col. 9:60-62, Col. 10:51-56)."

3. *Claim 3*

Carrier II discloses the additional limitations of Claim 3:

"The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof (Carrier II, Col. 5:19-40, Col. 9:13-30)."

Carrier II discloses that the fluid conduit (hose) may have quick release end couplings to connect it to the fluid pump, which necessarily includes an opening at its end. (Carrier II, Col. 5:19-40.) Based on the teaching of Carrier II, a person of ordinary skill in the art at the time of the invention would understand that the conduit would necessarily have an opening at its end in order to connect to the fluid pump.

4. *Claim 4*

Carrier II discloses the additional limitations of Claim 4:

"The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening (Carrier II, Col. 9:13-30, Col. 10:2-5, Col. 11:5-16)."

5. *Claim 5*

Carrier II discloses the additional limitations of Claim 5:

"The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier II, Col. 4:14-32, Col. 9:26-30)."

6. *Claim 6*

Carrier II discloses the additional limitations of Claim 6:

"The vehicle of claim 2, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier II, Col. 4:14-32, Col. 9:26-30)."

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7. *Claim 7*

Carrier II discloses the additional limitations of Claim 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 (Carrier II, Col. 8:16-18, Col. 8:27-28)."

Carrier II explains that the amphibious vehicle "is designed to be drivable . . . through deep water" (Carrier II, Col. 8:16-18.) Carrier II further explains that the amphibious vehicle may include "a propeller unit 68 to operate in water." (Carrier II, Col. 8:27-28.) The "propeller unit" is a fluid mover under the broadest reasonable interpretation of that term. The propeller unit controls the speed and direction of the vehicle of Carrier II when the vehicle is floating.

8. *Claim 8*

Carrier II discloses the additional limitations of Claim 8:

"The vehicle of claim 1, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Carrier II, Col. 9:26-30)."

Carrier II explains that the water cannon may have dual chambers, each with a corresponding nozzle: "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 chambers output end." (Carrier II, Col. 9:26-30).

9. *Claim 10*

Carrier II discloses the additional limitations of Claim 10:

"The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Carrier II, Col. 4:14-32, Col. 5:19-40, Col. 8:45-53, Col. 9:26-30, Col. 9:60-62, Col. 10:51-56)."

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10. *Claim 12*

Carrier II discloses the additional limitations of Claim 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 (Carrier II, Col. 5:40-43, Col. 6:41-54, Col. 6:60 – Col. 7:5, Col. 9:54-56)."

Carrier II discloses, for example, "independently stacked hydro-static drives that can be mechanically driven by . . . the engine." (Carrier II, Col. 7:1-2.)

11. *Claim 13*

Carrier II discloses all the limitations of Claim 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 (Carrier II, Col. 5:40-46, Col. 6:41 – Col. 7:11, Col. 11:5-16)."

12. *Claim 14*

Carrier II discloses the additional limitations of Claim 14:

"The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels (Carrier II, Col. 3:25-38, Col. 5:51-56, Col. 6:25-32, Col. 6:41-54)."

13. *Claim 15*

Carrier II discloses the additional limitations of Claim 15:

"The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels (Carrier II, Col. 7:5-11)."

14. *Claim 16*

Carrier II discloses the additional limitations of Claim 16:

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"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 (Carrier II, Col. 6:41 – Col. 7:11, Col. 7:46-54)."

15. *Claim 17*

Carrier II discloses the additional limitations of Claim 17:

"The vehicle of claim 16, wherein the wheels are operable at variable speed by the hydraulic motor (Carrier II, Col. 6:41 – Col. 7:11)."

16. *Claim 18*

Carrier II discloses the additional limitations of Claim 18:

"The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit (Carrier II, Col. 4:14-32, Col. 9:26-30)."

17. *Claim 19*

Carrier II discloses the additional limitations of Claim 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 (Carrier II, Col. 8:16-18, Col. 8:27-28)."

As discussed above with respect to Claim 7, the propeller unit of Carrier II is construed as a fluid mover under the broadest reasonable interpretation of that term.

18. *Claim 20*

Carrier II discloses the additional limitations of Claim 20:

"The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Carrier II, Col. 9:26-30)."

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D. Ground 4 (Carrier II in view of Puck): Detailed Prior Art Application to Claims 1-21

Claims 1-21 of the '425 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 II in view of Puck. A claim chart detailing this ground of invalidity is attached hereto as Exhibit N.

While both Carrier II and Puck were before the Examiner during prosecution of the '425 patent, it is apparent from the prosecution history that the Examiner did not consider the full scope of these references, which disclose every element of Claims 1-21 of the '425 patent as shown below. *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.

During prosecution of the '425 Patent, the Examiner never issued a claim rejection over Carrier II or Puck, or specifically applied these references to the claims at issue. The Examiner made no comment on Carrier II or Puck during prosecution. Indeed, the Examiner never issued ***any*** claim rejections at all during prosecution of the '425 Patent. As the Federal Circuit and PTAB have determined, the present SNQ presents these references in a new light because Carrier II and Puck never formed the basis of a rejection during prosecution and were never considered in the manner in which they are presented in the SNQ. *See In re Swanson,* 540 F.3d at 1379-80; *Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13; *Ex parte Invista N. Am., S.A.R.L.*, 2016 Pat. App. LEXIS 12692, *10; *see also Ex parte Omega Patents, LLC*, 2019 Pat.

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App. LEXIS 11432, at *10; *Ex parte Apple Inc.*, 2016 Pat. App. LEXIS 8496, at *13-14. Additionally, the Examiner issued the second Notice of Allowance, without comment, for the '425 Patent ***before*** the USPTO found a substantial new question of patentability and granted the '557 patent Reexamination Request. The SNQ finding for the '557 patent, at least, presents these references in a new light with respect to the patentability of the '425 patent, and Carrier II and Puck are properly considered here. *See* 35 U.S.C. § 303(a); MPEP § 2216.

As discussed with respect to Ground 3 above, Carrier II discloses all limitations of Claims 1-8, Claim 10, and Claims 12-20 of the '425 patent. The combination of Carrier I and Puck discloses the additional limitations of Claim 9, Claim 11, and Claim 21 of the '425 patent.

For the same reasons as discussed in Ground 2 above, to the extent it is determined that Carrier II does not disclose a fluid pump for pumping liquid manure or a remote control to control a flow of liquid manure, and these statements of intended use are determined to be required structural limitations, they are disclosed by Puck, which is especially adapted for pumping liquid manure and discloses a remote control for controlling a flow of liquid manure. A person of ordinary skill in the art at the time of the invention would have looked to the teachings of Carrier II and Puck when attempting to solve the problem addressed by the '425 patent, namely, the use of a pumping vehicle in connection with the agitation of manure ponds.

Carrier II, a multi-purpose amphibious pumping vehicle, and Puck, a floating manure agitator, are analogous art to the '425 patent. Here, both Carrier II 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 '425 patent and they are reasonably pertinent to the problem addressed by the invention of the '425 patent. During prosecution of the '557 patent, which shares a common specification with the '425 patent and to which the '425 patent claims priority, the Examiner cited

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Puck, which also demonstrates that it is analogous art. (*See* '557 Pat., Non-Final Office Action, September 14, 2020, at p. 2.) The Examiner also cited other amphibious vehicles such as Royle during prosecution of the '557 patent. Applicant did not challenge the Examiner's determination that Puck and other amphibious vehicles were analogous art, nor did Applicant challenge the motivation of a person of ordinary skill in the art to combine Puck with amphibious vehicles. (*See* '557 Pat., Amendment/Response, January 14, 2021, at p. 8.)

For the same reasons as discussed in Ground 2 above, 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 II 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 II, 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 remotely agitate manure lagoons would have naturally looked to the teachings of other vehicles, such as Puck, that are adapted for pumping liquid manure and disclose remote controls for remotely agitating manure lagoons. 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 II, which were already adapted for use in water and on land.

In fact, Applicant has admitted that prior art manure agitation boats (which include Puck) suffered from drawbacks such as an inability to exit a manure pond. In its Complaint in the underlying litigation disclosed above, Applicant pled:

> 18. While other agitation boat devices were introduced to the market, they had numerous drawbacks that the Patent-in-Suit overcame. For example, the Lagoon Crawler made it easier for the vehicle to enter and exit the lagoon. A typical lagoon has a berm that requires navigation both up and then back down. Prior art designs

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> required a trailer to launch the boat. Compounding this difficulty was the fact that the terrain around a lagoon is often muddy and wet. Indeed, a typical problem with the prior art boats was that they would get stuck on the bank or enter the lagoon too quickly and nosedive under the liquid.
>
> 19. Relatedly, prior art designs were often ineffective in exiting the lagoon, either because they got stuck in the mud at the bottom of the lagoon or got stuck on "islands" of solid buildup in the lagoon. This could lead to safety concerns when a tractor used chains to pull the boat from the lagoon. If the boat was stuck in the mud, the chains were known to break, endangering the drivers of the tractors.

(Exhibit L, at ¶¶ 19-20.)

One of ordinary skill in the art would naturally look to solve this problem by combining prior art manure agitation boats, such as Puck, with amphibious vehicles, such as Carrier II, that would be capable of entering and exiting a manure pond. 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 of the '557 patent, the Examiner found that other amphibious vehicles in combination with Puck "combine[] known features to achieve predictable results." ('557 Pat., Non-Final Rejection, September 14, 2020 at pp. 2-3.) The Applicant did not challenge this combination. (*See* '557 Pat., Amendment/Response, January 14, 2021, at p. 8.) The same reasoning applies with equal force to the combination of the amphibious vehicle of Carrier II with Puck. The combination of the amphibious pumping vehicle of Carrier II with the fluid pump of Puck for pumping liquid manure according to known methods would yield the predictable result of a remotely controlled amphibious pumping vehicle that is capable of pumping liquid manure.

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1. *Claim 1*

As discussed in Ground 3 above, Carrier II discloses all limitations of Claim 1. However, to the extent it is determined that Carrier II does not disclose a fluid pump "for pumping liquid manure" or a remote control structure to control "a flow of liquid manure," and these statements are determined to be required structural limitations, they are disclosed by Puck.

For the same reasons as discussed in Ground 2 above, faced with the problem of remotely 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, and a remote control for controlling that pump, in connection with an amphibious pumping vehicle. (Puck, [0027]; *see also* [0008], [0026].)

To that end, like Carrier II, Puck also discloses the following limitations of Claim 1: a floatable vehicle body (Puck, Abstr., [0001], [0006], [0008], Fig. 1); a fluid pump for pumping liquid manure (Puck, [0006], [0026], [0027], Fig. 6); a power source configured to provide power to the fluid pump (Puck, [0024], [0025]); and a remote control system to control the flow of fluid from the fluid pump and the speed and direction of the vehicle (Puck, [0009], [0011], [0027], 0035], [0037]). As discussed above with respect to Ground 3, Carrier II 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 2-8*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claims 2-8. The addition of Puck is not necessary to meet all limitations of these claims. However, the combination of Carrier II and Puck is presented in the alternative to the extent it is determined that Carrier II does not disclose all limitations of these claims.

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To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 2, Puck discloses a conduit fluidly connected to the fluid pump. (Puck, [0011], [0027], [0035], Figs. 4-6.)

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 3, Puck discloses a conduit comprising an opening at an end thereof. (Puck, [0027].)

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 4, Puck discloses a wireless remote control configured to control an orientation of the opening. (Puck, [0027], [0033], [0035], [0037], Fig. 7.)

To the extent it is determined that Carrier II does not disclose the additional limitations of Claims 5 and 6, Puck discloses a nozzle at the end of the conduit. (Puck, [0008], [0027], [0029], [0033], Figs. 4-6.)

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 7, Puck discloses a fluid mover controlling at least one of speed and direction of the vehicle when the vehicle is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].)

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 8, Puck discloses a plurality of fluid nozzles connected to the fluid pump. (Puck, [0008], [0027], [0029], Fig. 4, Fig. 6).

3. *Claim 9*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Fig. 7)."

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As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier II and Puck to arrive at the claimed invention of the '425 patent.

4. *Claim 10*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claim 10. The addition of Puck is not necessary to meet all limitations of this claim. However, the combination of Carrier II and Puck is presented in the alternative to the extent it is determined that Carrier II does not disclose all limitations of this claim.

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 10, Puck discloses a plurality of fluid nozzles connected to the fluid pump. (Puck, [0008], [0027], [0029], Fig. 4, Fig. 6).

5. *Claim 11*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0009], [0011], [0032], [0033], [0035], [0037])."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier II and Puck to arrive at the claimed invention of the '425 patent.

6. *Claim 12*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claim 12. The addition of Puck is not necessary to meet all limitations of this claim. However, the combination of Carrier II and Puck is presented in the alternative to the extent it is determined that Carrier II does not disclose all limitations of this claim.

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To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 12, Puck discloses a power source is connected to the hydraulic pump by a mechanical drive and connected to the fluid pump by the mechanical drive. (Puck, [0011], [0024], [0025], [0027].)

7. *Claims 13-18*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claims 13-18. The addition of Puck is not necessary to meet all limitations of these claims.

8. *Claim 19*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claim 19. The addition of Puck is not necessary to meet all limitations of this claim. However, the combination of Carrier II and Puck is presented in the alternative to the extent it is determined that Carrier I does not disclose all limitations of this claim.

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 19, Puck discloses a fluid mover controlling at least one of speed and direction of the vehicle when the vehicle is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].)

9. *Claim 20*

As shown with respect to Ground 3 above, Carrier II discloses all the limitations of Claim 20. The addition of Puck is not necessary to meet all limitations of this claim. However, the combination of Carrier II and Puck is presented in the alternative to the extent it is determined that Carrier II does not disclose all limitations of this claim.

To the extent it is determined that Carrier II does not disclose the additional limitations of Claim 20, Puck discloses a plurality of fluid nozzles connected to the fluid pump. (Puck, [0008], [0011], [0027], [0029], [0035], [0037], Fig. 4, Fig. 6).

10. *Claim 21*

Puck discloses the additional limitations of Claim 21:

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"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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Fig. 7)."

As shown above with respect to Claim 1, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Carrier II and Puck to arrive at the claimed invention of the '425 patent.

E. Ground 5 (Puck in view of Bennett): Detailed Prior Art Application to Claims 1-21

Claims 1-21 of the '415 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 O.

While Puck and Bennett were before the Examiner during prosecution of the '425 patent, it is apparent from the prosecution history that the Examiner did not consider the full scope of these references, which disclose every element of Claims 1-21 of the '425 patent as shown below. *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.

During prosecution of the '425 Patent, the Examiner never issued a claim rejection over Puck or Bennett, or specifically applied these references to the claims at issue. The Examiner made no comment on Puck or Bennett during prosecution. Indeed, the Examiner never issued ***any*** claim

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rejections at all during prosecution of the '425 Patent. As the Federal Circuit and PTAB have determined, the present SNQ presents these references in a new light because Carrier II and Puck never formed the basis of a rejection during prosecution and were never considered in the manner in which they are presented in the SNQ. *See In re Swanson,* 540 F.3d at 1379-80; *Ex parte Allied Mach. & Eng'g Corp.*, 2015 Pat. App. LEXIS 8829, at *12-13; *Ex parte Invista N. Am., S.A.R.L.*, 2016 Pat. App. LEXIS 12692, *10; *see also Ex parte Omega Patents, LLC*, 2019 Pat. App. LEXIS 11432, at *10; *Ex parte Apple Inc.*, 2016 Pat. App. LEXIS 8496, at *13-14. Additionally, the Examiner issued the second Notice of Allowance for the '425 Patent without comment ***before*** the USPTO found a substantial new question of patentability and granted the '557 patent Reexamination Request. The SNQ finding for the '557 patent, at least, presents these references in a new light with respect to the patentability of the '425 patent, and Puck and Bennett are properly considered here. *See* 35 U.S.C. § 303(a); MPEP § 2216.

During prosecution of the '557 patent, which shares a common specification with the '425 patent and to which the '425 patent claims priority, 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." ('557 Pat., Final Office Action, February 1, 2021, pp. 2-3.) Applicant did not challenge that combination or challenge the Examiner's determination that Puck and Bennett were analogous art. Even without relying on the Examiner's prior determination regarding the '557 patent, 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 '425 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 '425 patent. Here, both Puck and

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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 '425 patent and they are reasonably pertinent to the problem addressed by the invention of the '425 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.

In fact, Applicant has admitted that prior art manure agitation boats (which include Puck) suffered from drawbacks such as an inability to exit a manure pond. In its Complaint in the underlying litigation disclosed above, Applicant pled:

> 18. While other agitation boat devices were introduced to the market, they had numerous drawbacks that the Patent-in-Suit overcame. For example, the Lagoon Crawler made it easier for the vehicle to enter and exit the lagoon. A typical lagoon has a berm that requires navigation both up and then back down. Prior art designs required a trailer to launch the boat. Compounding this difficulty was the fact that the terrain around a lagoon is often muddy and wet. Indeed, a typical problem with the prior art boats was that they would get stuck on the bank or enter the lagoon too quickly and nosedive under the liquid.
>
> 19. Relatedly, prior art designs were often ineffective in exiting the lagoon, either because they got stuck in the mud at the bottom of the lagoon or got stuck on "islands" of solid buildup in the lagoon. This could lead to safety concerns when a tractor used chains to pull the boat from the lagoon. If the boat was stuck in the mud, the chains were known to break, endangering the drivers of the tractors.

(Exhibit L, at ¶¶ 19-20.)

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One of ordinary skill in the art would naturally look to solve this problem by combining prior art manure agitation boats, such as Puck, with amphibious vehicles, such as Bennett, that would be capable of entering and exiting a manure pond. 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 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, during prosecution of the '557 patent, the Examiner determined that the combination of Puck and Bennett "combines known features to achieve predictable results." ('557 Pat., 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 1-21. The claims are reproduced below, with 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 comprising a plurality of ground engaging elements powered by a hydraulic motor (Bennett, [0003], [0044], [0062]-[0064], [0083], [0090], Fig. 1);

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

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, (Puck, [0011]; Bennett, [0043], [0083]); 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 (Puck, Abstr., [0011], [0027], [0035]; Bennett, [0043], [0121]).”

2. *Claim 2*

Puck discloses the additional limitations of Claim 2:

“The vehicle of claim 1, wherein the vehicle further comprises a conduit fluidly connected to the fluid pump (Puck, [0011], [0027], [0035]).”

3. *Claim 3*

Puck discloses the additional limitations of Claim 3:

“The vehicle of claim 2, wherein the conduit comprises an opening at an end thereof (Puck, [0027]).”

4. *Claim 4*

Puck discloses the additional limitations of Claim 4:

“The vehicle of claim 3, wherein the wireless remote control is configured to control an orientation of the opening (Puck, [0033], [0035], [0037]).”

5. *Claim 5*

Puck discloses the additional limitations of Claim 5:

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"The vehicle of claim 4, wherein the vehicle further comprises a nozzle at the end of the conduit (Puck, [0008], [0027], [0029], [0033])."

6. *Claim 6*

Puck discloses the additional limitations of Claim 6:

"The vehicle of claim 2, wherein the vehicle further comprises a nozzle at the end of the conduit (Puck, [0008], [0027], [0029], [0033])."

7. *Claim 7*

Puck and Bennett disclose the additional limitations of Claim 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 (Puck, Abstr., [0011], [0027], [0029], [0032], [0035]; Bennett, [0059], [0079])."

Puck discloses the use of a fluid mover, e.g., fluid pump and nozzles, to control at least one of the speed and direction of the vehicle when it is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].)

Bennett likewise discloses the use of a fluid mover, e.g., a jet pump and/or propeller, to control ***at least one of*** the speed and direction of the vehicle when it is floating. Bennett explains: "[V]ehicle 10 may be configured to support a jet pump and/or propeller member to assist with amphibious operation . . . ." (Bennett, [0059].) Bennett further discloses "a jet pump and/or propeller member to assist in propelling [the] vehicle in water during amphibious operation." (Bennett, [0079].)

8. *Claim 8*

Puck discloses the additional limitations of Claim 8:

"The vehicle of claim 1, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0027], [0029], Claim 14, Claim 20)."

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9. *Claim 9*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Claim 2, Claim 15)."

10. *Claim 10*

Puck discloses the additional limitations of Claim 10:

"The vehicle of claim 4, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0027], [0029], Claim 14, Claim 20)."

11. *Claim 11*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0009], [0011], [0032], [0033], [0035], [0037], Claim 2, Claim 15)."

12. *Claim 12*

Puck discloses the additional limitations of Claim 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 (Puck, [0011], [0024], [0025], [0027])."

13. *Claim 13*

Puck and Bennett disclose the additional limitations of Claim 13:

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"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 (Puck, [0024], [0035]; Bennett, [0043], [0083], [0090], [0121])."

14. *Claim 14*

Bennett discloses the additional limitations of Claim 14:

"The vehicle of claim 13, wherein the ground engaging propulsion structure comprises a set of wheels (Bennett, [0003], [0062], [0063], [0064], [0092])."

15. *Claim 15*

Bennett discloses the additional limitations of Claim 15:

"The vehicle of claim 14, wherein the set of wheels comprises at least two powered wheels (Bennett, [0003], [0062], [0063], [0064], [0092])."

To the extent that it is determined that Bennett does not disclose at least two powered 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).) 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 P. (Bennett, [0057].) Kinsman discloses a utility vehicle with at least two powered 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 at least two powered wheels. Additionally, the use of hydraulically driven, powered wheels is well-known

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in the art. (*See, e.g.*, Carrier II, Col. 6:41-46.) The use of at least two powered wheels would have been obvious to one of ordinary skill in the art at the time of the invention.

16. *Claim 16*

Bennett discloses the additional limitations of Claim 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 (Bennett, [0003], [0062], [0063], [0064], [0090], [0092])."

To the extent it is determined that Bennett does not disclose four independently powered wheels, such disclosure would have been obvious to a person of ordinary skill in the art considering the teachings of Bennett. Bennett discloses the use of two variable speed hydraulic motors, one for each set of tracks. (Bennett, [0083], [0084], [0085].) Bennett also discloses four powered wheels. (Bennett, [0003]; [0057] (incorporating disclosure of Kinsman by reference); Kinsman, [0120].) Accordingly, the use of four independently powered wheels would have been obvious to one of ordinary skill in the art at the time of the invention.

17. *Claim 17*

Bennett discloses the additional limitations of Claim 17:

"The vehicle of claim 16, wherein the wheels are operable at variable speed by the hydraulic motor (Bennett, [0003], [0062], [0064], [0083]-[0085], [0090], [0092])."

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.

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18. *Claim 18*

Puck discloses the additional limitations of Claim 18:

"The vehicle of claim 17, wherein the vehicle further comprises a nozzle at the end of the conduit (Puck, [0008], [0011], [0027], [0035], [0037])."

19. *Claim 19*

Puck and Bennett disclose the additional limitations of Claim 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 (Puck, Abstr., [0011], [0027], [0029], [0032], [0035]; Bennett, [0059], [0079])."

As explained with respect to Claim 7 above, Puck discloses the use of a fluid mover, e.g., fluid pump and nozzles, to control at least one of the speed and direction of the vehicle when it is floating. (Puck, Abstr., [0011], [0027], [0029], [0032], [0035].) Bennett likewise discloses the use of a fluid mover, e.g., a jet pump and/or propeller, to control at least one of the speed and direction of the vehicle when it is floating, (Bennett, [0059], [0079].)

20. *Claim 20*

Puck discloses the additional limitations of Claim 20:

"The vehicle of claim 17, further comprising a plurality of fluid nozzles fluidly connected to the fluid pump (Puck, [0008], [0011], [0027], [0035], [0037])."

21. *Claim 21*

Puck discloses the additional limitations of Claim 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 (Puck, Abstr., [0011], [0032], [0033], [0035], [0037], Claim 2, Claim 15)."

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IX. Conclusion

The prior art relied upon in this Request raises substantial new questions of patentability as to claims 1-21 of the '425 patent. The prior art relied upon in this Request supports the various anticipation and obviousness rejections of claims 1-21 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 1-21 of the '425 patent are unpatentable.

Respectfully submitted,

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Dated: August 30, 2022

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EXHIBIT C

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(12) **Patent Application Publication**

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(54) **FLOATING MANURE AGITATOR**

(76) Inventor: **BENNY D. PUCK**, Manning, IA (US)

(21) Appl. No.: **13/323,020**

(22) Filed: **Dec. 12, 2011**

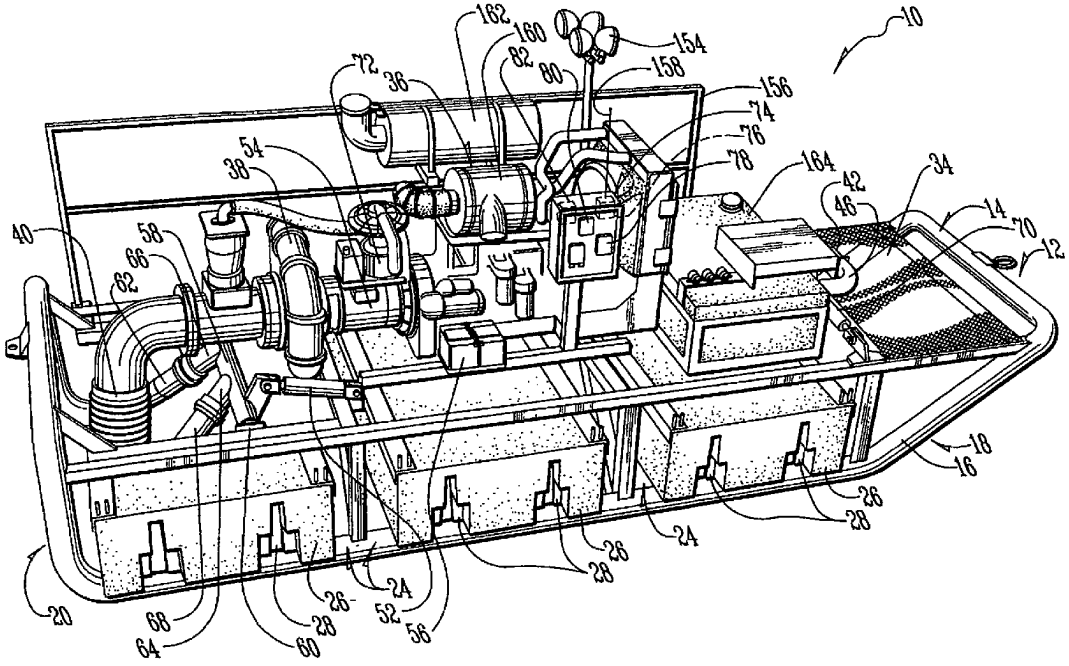
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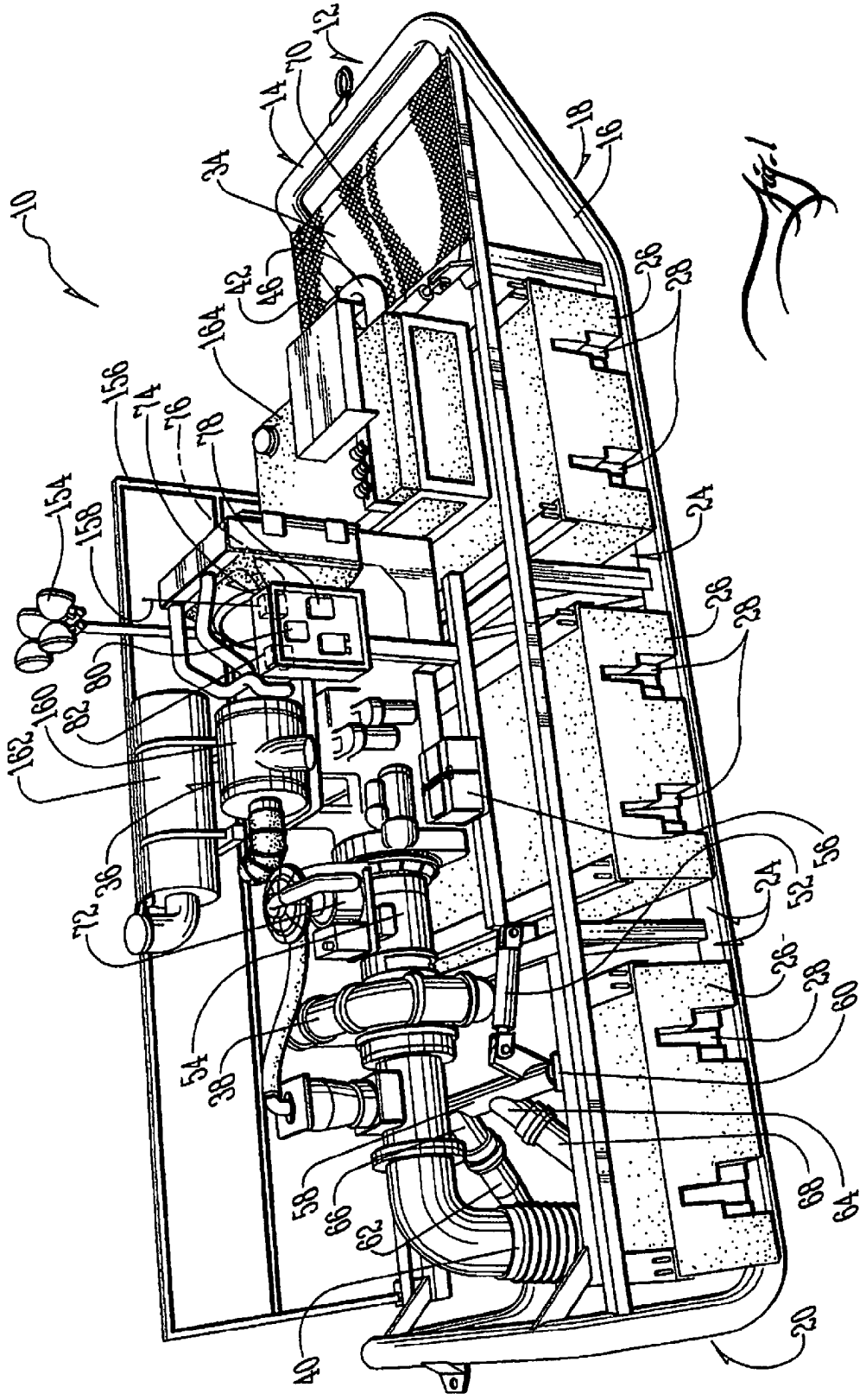
(51) **Int. Cl.**
A01C 3/02 (2006.01)

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CPC ***A01C 3/026*** (2013.01)
USPC **366/182.2**

(57) **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.




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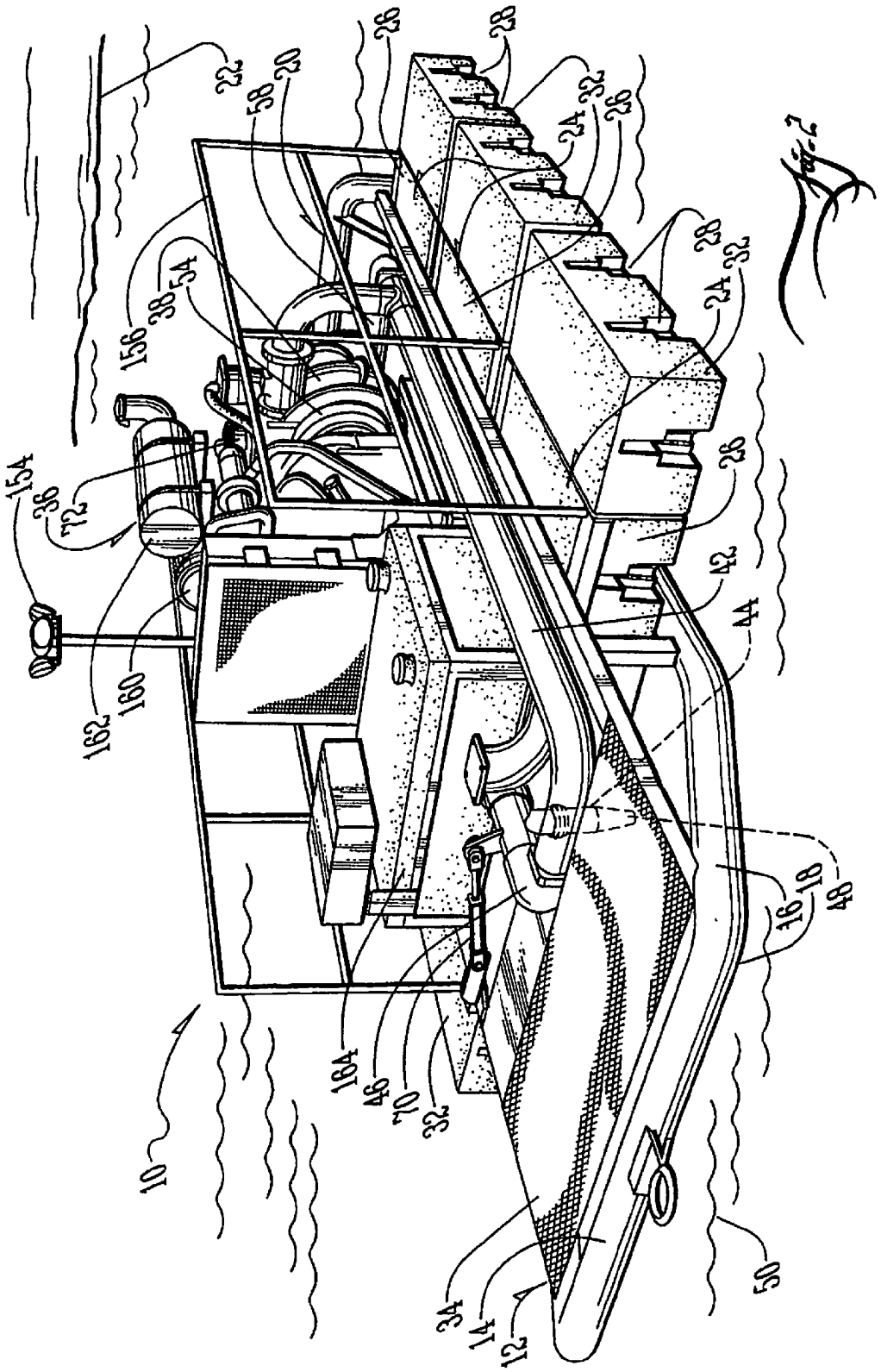
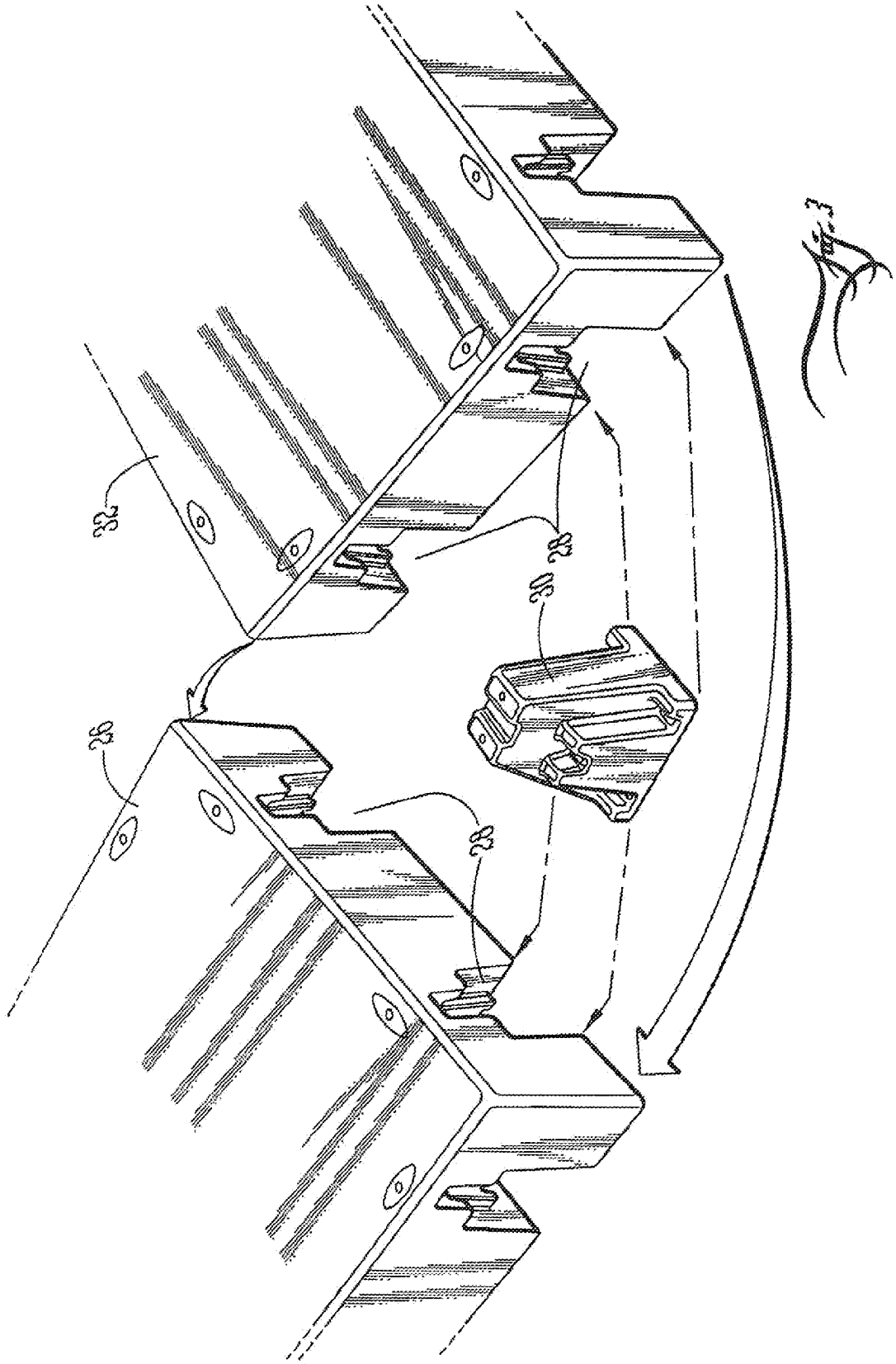

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Fig. 2



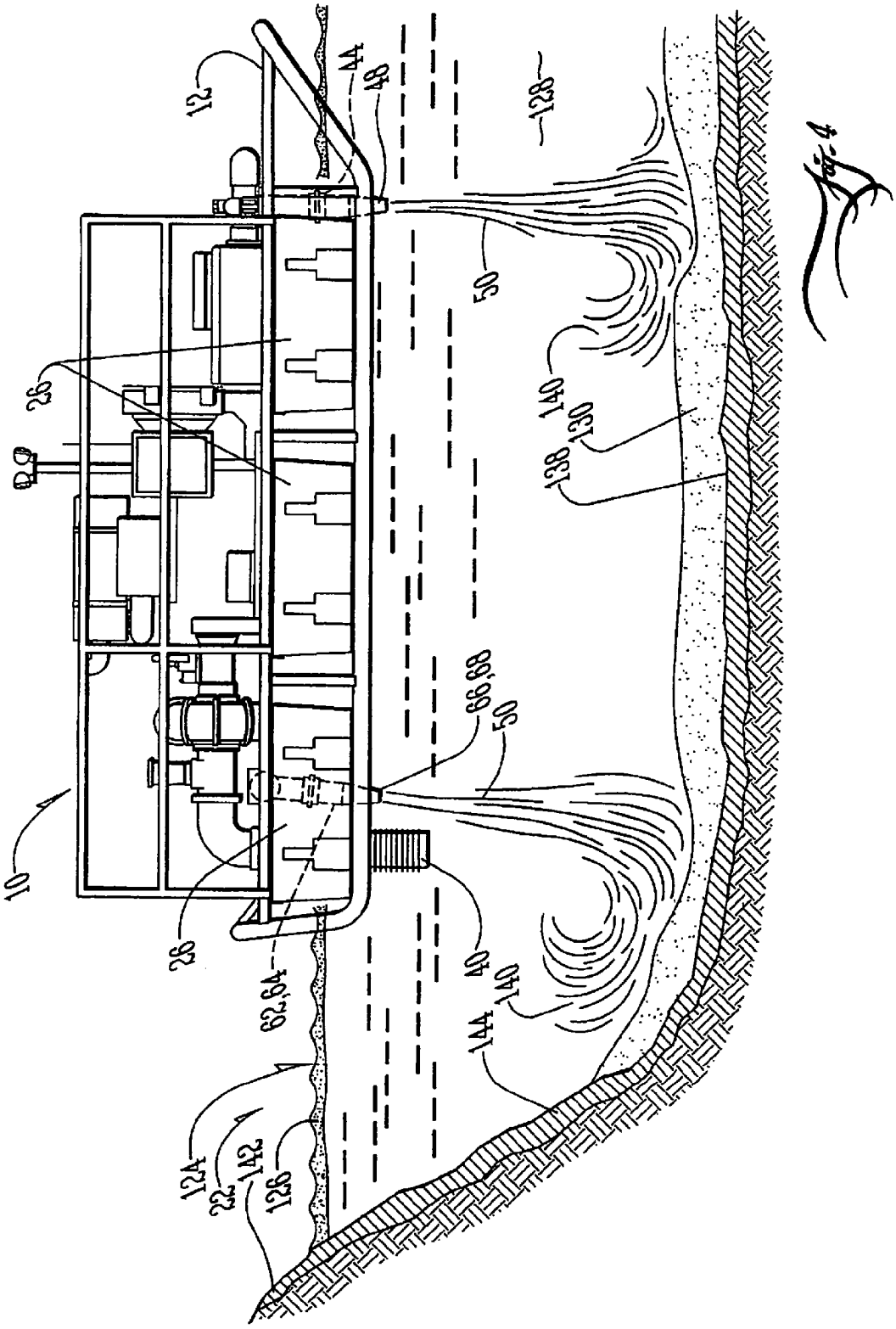

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Fig. 4

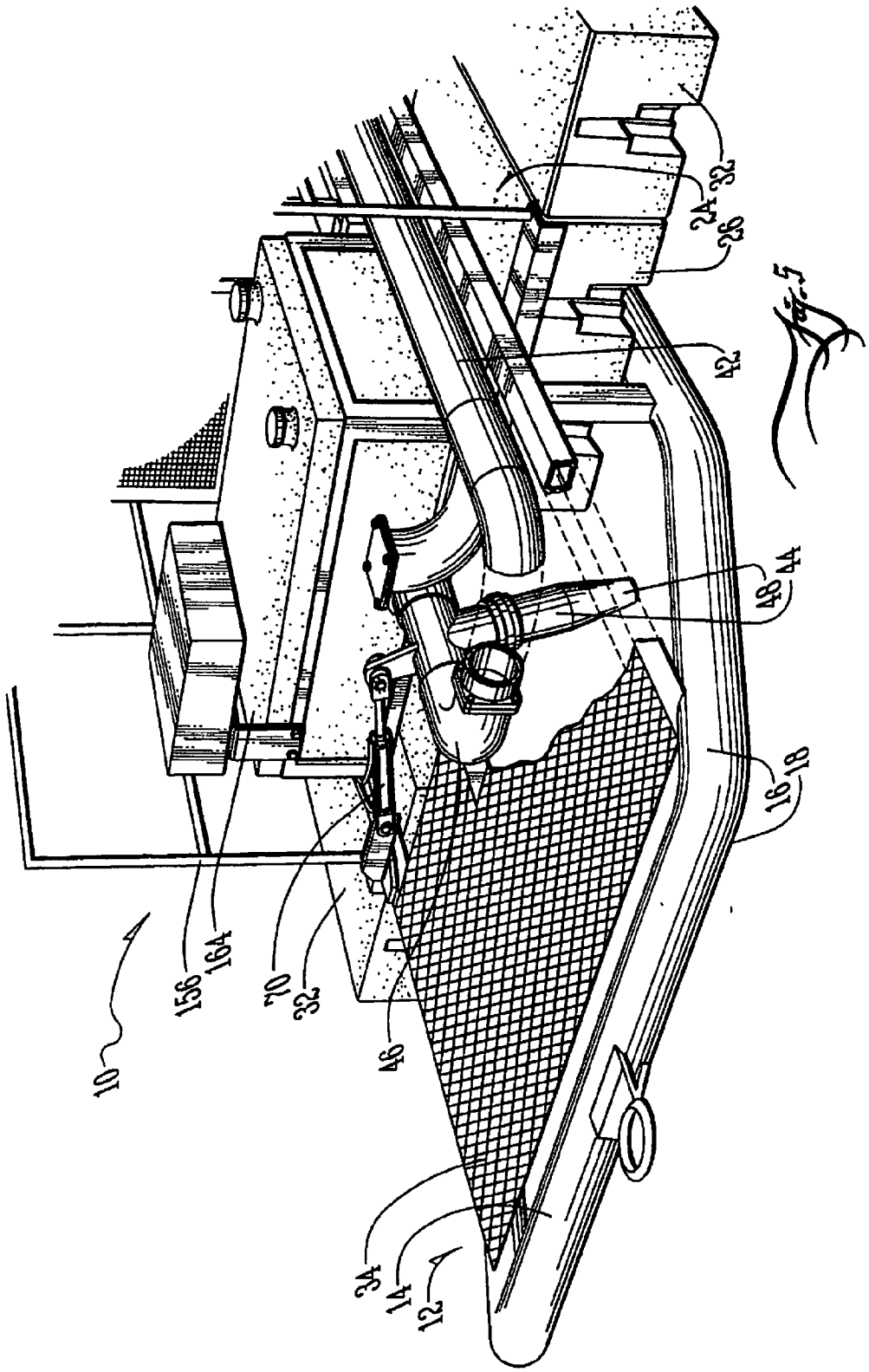
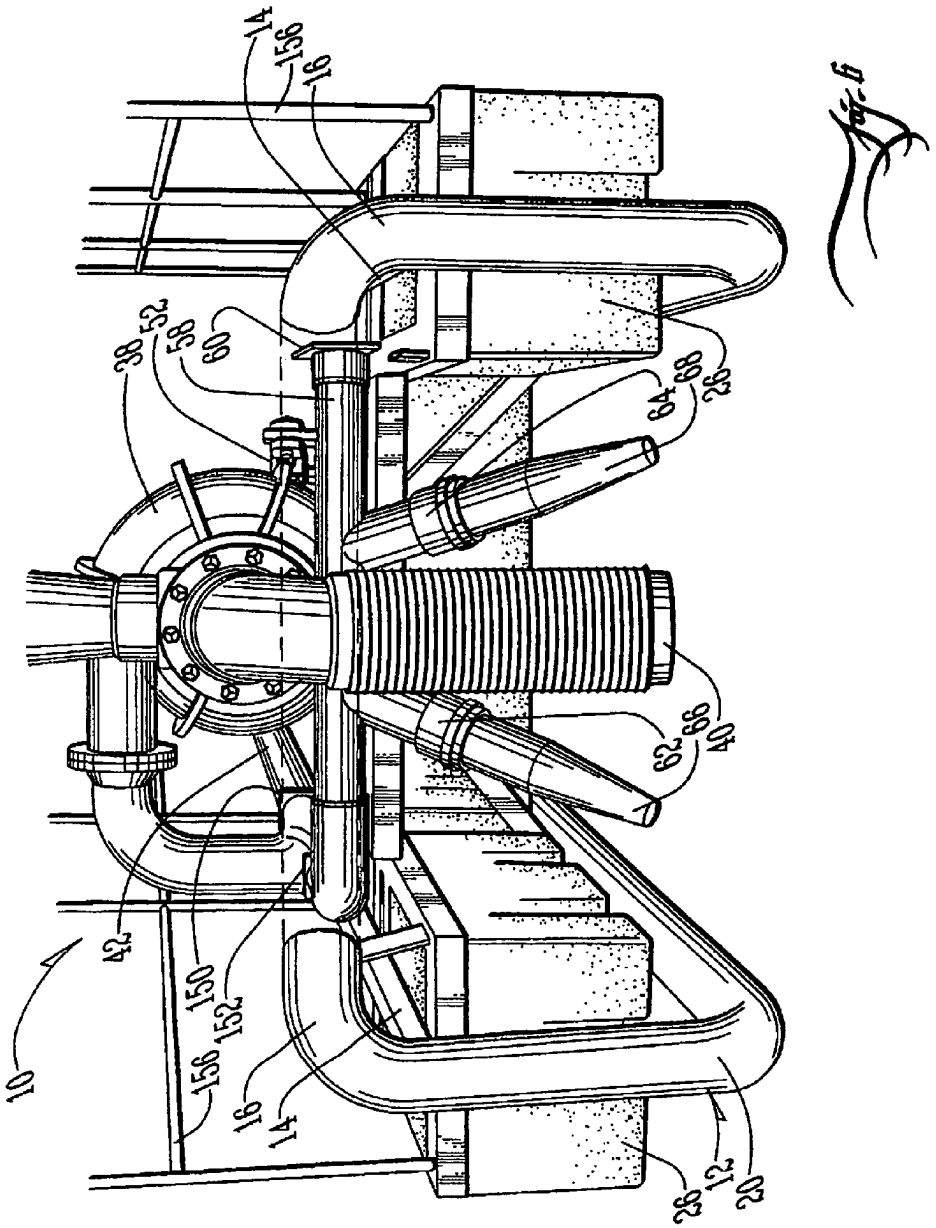


Fig. 5


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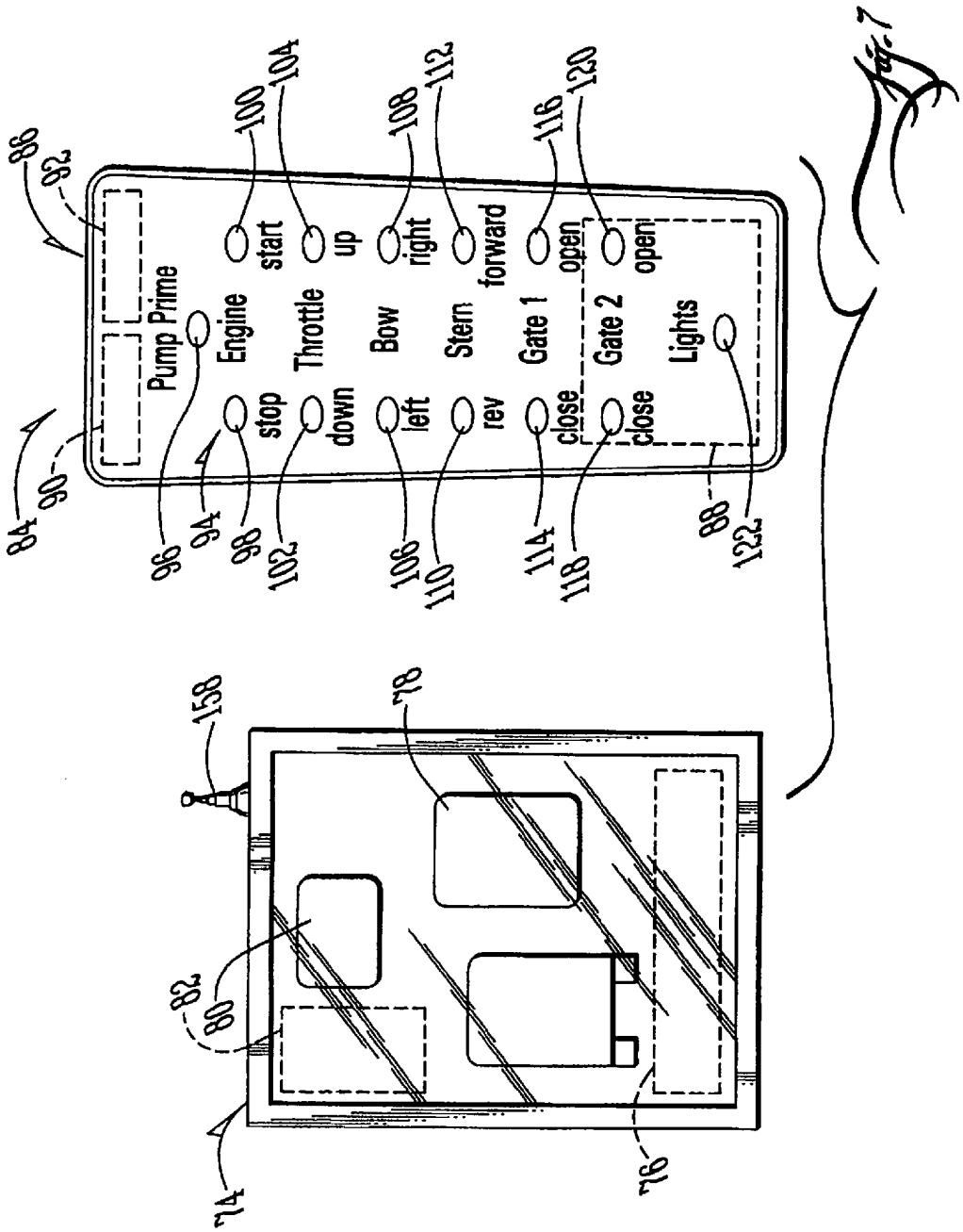

Pump Prime
Engine
Throttle
Bow
Stern
Gate 1
Gate 2
Lights
start
up
right
forward
open
open
stop
down
left
rev
close
close
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Fig-7

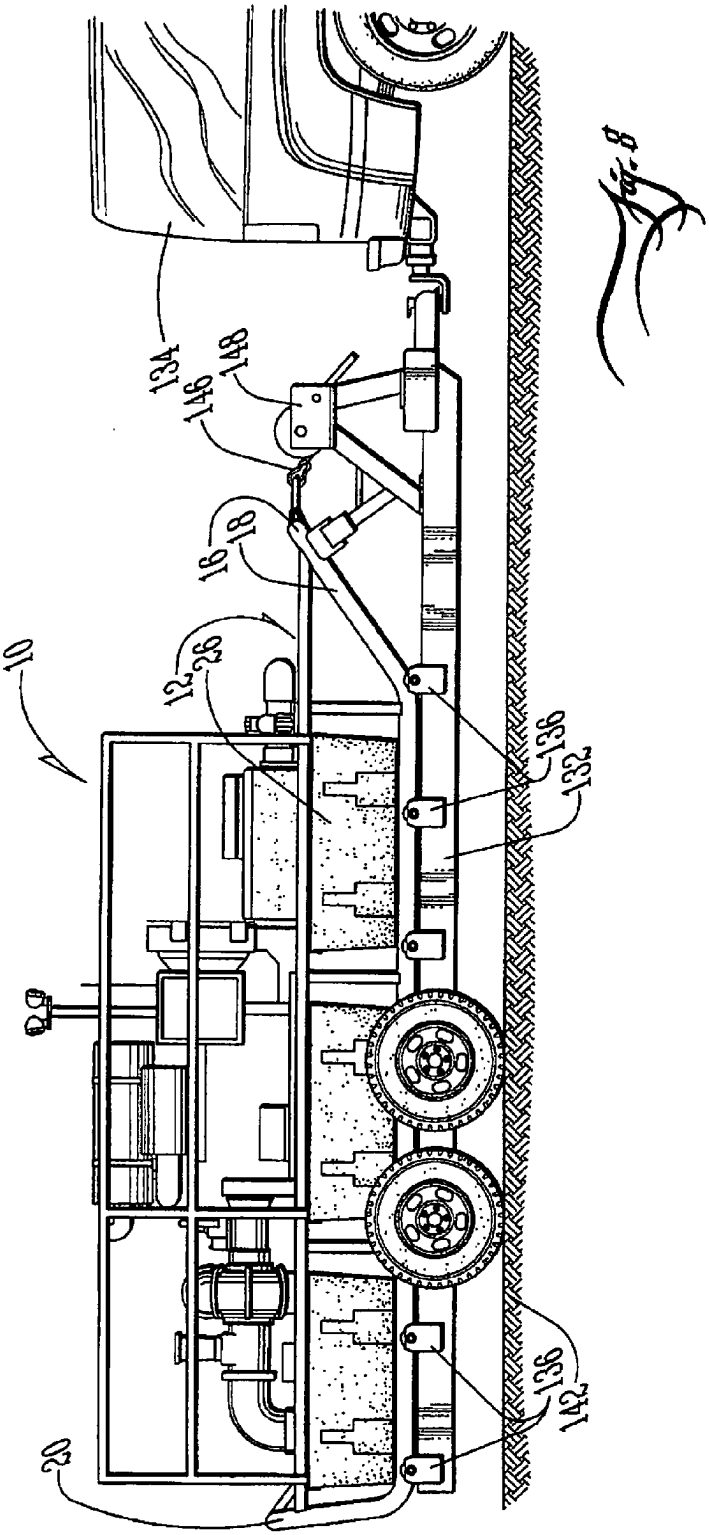


Fig. 8

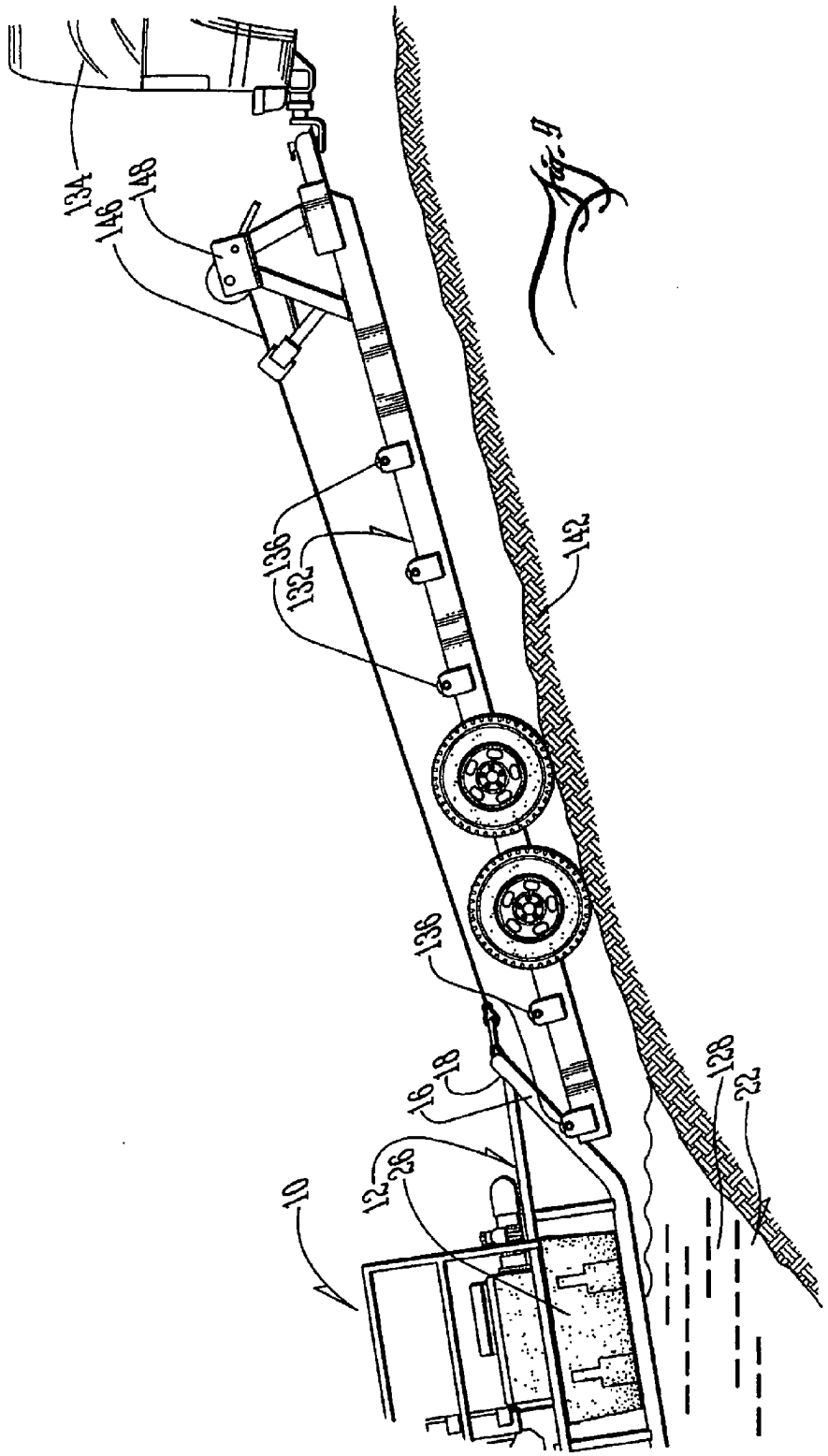


Fig. 9

FLOATING MANURE AGITATOR

TECHNICAL FIELD

[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.

BACKGROUND

[0002] Livestock produce a large amount of manure. The high nitrogen content of the manure makes it useful as a fertilizer on agricultural fields. While manure is continually produced, it is only needed as fertilizer during certain times of the year. During the times it is being produced and not yet needed, it must be stored. It is also desirable to break down the manure prior to application as a fertilizer. One method of storing and breaking down livestock manure is a manure lagoon. Manure lagoons are sloped, fluid impermeable pits fifteen to thirty-five feet deep and may be several hundred feet across.

[0003] Manure from a livestock operation is pumped into a lagoon where anaerobic bacteria digest, liquefy, and convert a portion of the manure to carbon dioxide, methane, ammonia and hydrogen sulfide. The resulting supernatant contains nitrogen and calcium. The resulting solids form a sludge that rests on the bottom of the manure lagoon. The sludge is made up of several biodegradable organic solids, including lignin and cellulose. The sludge also contains high concentrations of phosphorous. After anaerobic bacteria breaks down the manure, the manure is pumped from the lagoon to a tank for transport and then applied to an agricultural field.

[0004] To prevent an undesirable buildup of sludge at the bottom of the lagoon, it is known in the art to place an agitator within the lagoon to create a slurry by moving solids in sludge into suspension within the supernatant. 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.

[0005] Alternatively, the propeller or auger may be rotated at an increased speed to move more sludge to move into suspension. One drawback associated with increasing the speed of rotation of the propeller or auger is the increased risk to the bottom of the lagoon. If the speed of the rotation of the propeller or auger is increased too much, the bottom of the lagoon may be damaged, allowing the manure to leak into the ground water. Yet another drawback associated with the prior art is mixing sludge at the center of the lagoon. Prior art agitators are typically operated from shore. Even with long agitators it is difficult to mix sludge at the center of the lagoon, which leads to a buildup of sludge at the center of the lagoon. It would, therefore, be desirable to provide deep agitation at the center of the lagoon, to more thoroughly suspend the sludge solids within the supernatant.

[0006] It is also known in the art to provide a large vehicle that may be lowered into the lagoon. The vehicle may be 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.

[0007] 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.

[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.

[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 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.

[0010] The difficulties encountered in the prior art discussed hereinabove are substantially eliminated by the present invention.

SUMMARY OF THE DISCLOSED SUBJECT MATTER

[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.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention will now be described, by way of example, with reference to the accompanying drawings in which:

[0013] FIG. **1** illustrates a side perspective view of the floating manure agitator of the present invention;

[0014] FIG. **2** illustrates a front perspective view of the floating manure agitator of FIG. **1**, being retrieved from a manure lagoon;

[0015] FIG. **3** illustrates a top perspective view of the modular dock sections and connector pin;

[0016] FIG. **4** illustrates a side elevation of the floating manure agitator of FIG. **1** on a manure lagoon;

[0017] FIG. **5** illustrates a front perspective view of the floating manure agitator of FIG. **1**;

[0018] FIG. **6** illustrates a front perspective view of the floating manure agitator of FIG. **1**;

[0019] FIG. **7** illustrates a block diagram in partial cutaway of the control panel and portable computer;

[0020] FIG. **8** illustrates a side perspective view of the floating manure agitator of FIG. **1** being transported; and

[0021] FIG. **9** illustrates a side perspective view of the floating manure agitator of FIG. **1** being retrieved from a manure lagoon.

DETAILED DESCRIPTION OF THE DRAWINGS

[0022] A floating fluid agitator is shown generally as (**10**) in FIG. **1**. A vessel (**12**) is provided having a frame (**14**) preferably constructed of welded tubular steel pipes (**16**). The vessel (**12**) may alternatively be constructed of any suitable material or may be constructed with a more standard hull, such as those known in the art. The frame (**14**) is constructed with an angled bow (**18**) and a vertical stern (**20**). The angled bow (**18**) facilitates the launch and retrieval of the agitator (**10**) from a manure lagoon (**22**). (FIGS. **1-2**). The frame (**14**) defines a plurality of receiver slots (**24**) into which are provided modular dock sections (**26**), such as those known in the art. In the preferred embodiment, the dock sections (**26**) are 1000 series dock components manufactured by Connect-A-Dock, Inc. of Atlantic, Iowa.

[0023] The modular dock sections (**26**) are provided with connector slots (**28**) to fit into interlocking mating engagement with connector pins (**30**). The connector pins (**30**) allow the modular dock sections (**26**) to connect to additional dock sections (**32**) in a manner such as that known in the art. (FIGS. **1** and **3**). The use of interlocking additional dock sections (**32**) allows for the buoyancy of the vessel (**12**) to be increased and allows the additional dock sections (**32**) to be removed to reduce the overall width of the agitator (**10**) for transport and storage. If desired, pontoons, inflatable components or any other type of buoyant material may be used in place of, or in addition to, the modular dock sections (**26**) and additional dock sections (**32**). Preferably, the vessel (**12**) has ten to fifty inches of draw, more preferably between fifteen and thirty inches of draw, and most preferably about twenty-six inches of draw.

[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 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 embodiment, the slurry pump (**38**) is a Cornell Redi-Prime centrifugal pump capable of handling both solid and liquid material. The slurry pump (**38**) is preferably designed to move between one thousand and twenty-four thousand liters of material per minute, more preferably between eight thousand and twenty thousand liters of material per minute, and most preferably about sixteen thousand liters of material per minute.

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

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

[0028] As shown in FIG. **6**, journaled to the rear outlet of the transport pipe (**42**) is a pivot pipe (**58**). The pivot pipe (**58**) is also journaled to a bearing (**60**) secured to the frame (**14**). (FIG. **6**). Depending from the pivot pipe (**58**) are a second slurry output (**62**) and a third slurry output (**64**). Preferably the slurry outputs (**62**) and (**64**) are angled outward from the centerline of the vessel (**12**), along which the intake pipe (**40**) is located. (FIGS. **4** and **6**).

[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 starboard, more preferably between ten and sixty degrees starboard and, most preferably, between fifteen and forty-five degrees starboard. The intake pipe (**40**) is preferably positioned between the first slurry output (**44**) and the second slurry output (**62**).

[0030] Coupled between the pivot pipe (**58**) and the frame (**14**) is a hydraulic cylinder (**70**) that rotates the pivot pipe (**58**) to direct the second slurry output (**62**) and third slurry output (**64**) preferably between 90 degrees aft and 90 degrees stern from a downward position, more preferably between 60

degrees aft and 60 degrees stern, and most preferably at least about 45 degrees aft and 45 degrees stern.

[0031] The hydraulic cylinder (**70**) is coupled to the hydraulic pump (**54**). The hydraulic pump (**54**) is coupled to a control manifold (**72**) that is electronically coupled to a control panel (**74**) provided with a central processing unit (**76**) and a global positioning system (**78**). (FIGS. **1** and **7**). Also coupled to the control panel (**74**) are a wireless receiver (**80**) and wireless transmitter (**82**), that allow the control panel (**74**) to operate as a wireless remote control, actuated by a remote control system (**84**). (FIGS. **1** and **5**). The remote control system (**84**) may be a portable computer (not shown) or simply a handset (**86**) provided with a battery (**88**), wireless transmitter (**90**) and a wireless receiver (**92**). The remote control system (**84**) may be provided with one or more joysticks, touchscreens, keyboards or other input devices known in the art (not shown), to allow the remote control system (**84**) to accept commands. In the preferred embodiment, the remote control system (**84**) is provided with a plurality of buttons (**94**) as shown in FIG. **7**. The remote control system (**84**) is provided with a pump prime button (**96**). The prime pump button (**96**) signals the control panel (**74**) to circulate fluid within the slurry pump (**38**) to prime the pump (**38**) prior to use.

[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**) starboard. 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 agitator (**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 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 feedback from the control panel (**74**), such as system status, latitude, longitude and height coordinates.

[0034] When it is desired to use the agitator (**10**) to agitate manure (**124**), that has separated into crust (**126**), supernatant (**128**) and sludge (**130**), into a slurry (**50**), the agitator (**10**) is preferably transported to the manure lagoon (**22**) using a trailer (**132**) and pulling vehicle (**134**). (FIGS. **4** and **8**). Once at the manure lagoon (**22**), the additional dock sections (**32**) are placed into mating engagement with the modular dock sections (**26**) and the trailer is backed toward the lagoon (**22**). (FIGS. **1**, **4**, **8** and **9**). Depending upon the angle of the trailer (**132**), the agitator (**10**) may roll off the trailer (**132**) by the force of gravity or may be manually pushed from the trailer (**132**) into the lagoon (**22**). If desired, the trailer (**132**) may be fitted with a plurality of rollers (**136**) to facilitate the removal of the agitator (**10**) from the trailer (**132**).

[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 (**74**) to direct the hydraulic 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 supernatant (**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.

[0036] As the agitator (**10**) moves across the lagoon (**22**), the agitator (**10**) breaks up the crust (**126**) as it draws supernatant (**128**) into the intake pipe (**40**). The agitator (**10**) then draws the supernatant (**128**) downward into the lagoon (**22**) with sufficient force to cause the sludge (**130**) at the bottom (**138**) of the lagoon (**22**) to mix with the supernatant (**128**) and to form the slurry (**50**). The angle of the slurry outputs (**62**) and (**64**) causes the supernatant (**128**) to generate vortices (**140**) near the bottom (**138**) of the lagoon (**22**) to cause additional mixing between the supernatant (**128**) and sludge (**130**).

[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**).

[0038] Once the slurry (**50**) is adequately mixed, the remote control system (**84**) is used to guide the agitator (**10**) to the shore (**142**), where the agitator (**10**) may be coupled to a cable (**146**) and winch (**148**) provided on the trailer (**132**). The winch (**148**) is activated to draw the agitator (**10**) on to the trailer (**132**). Preferably during this procedure a hose or similar system is used to clean the slurry (**50**) from the agitator (**10**) as the agitator (**10**) is drawn on to the trailer (**132**). Once the agitator (**10**) has been cleaned and placed on the trailer

(**132**), the additional dock sections (**32**) are removed from the modular dock sections (**26**) and placed upon the vessel (**134**) and secured for transport.

[0039] As shown in FIG. **6**, the agitator (**10**) may be provided with a railing system (**156**) constructed of steel to allow a user to inspect the agitator (**10**). (FIG. **2**). If desired, the agitator (**10**) may also be provided with a power antenna system (**158**) such as those known in the art to increase GPS and wireless reception.

[0040] As shown in FIG. **2**, the air intake system (**160**) is preferably placed above the power source (**36**) to reduce the likelihood of slurry (**50**) blocking the air intake system (**160**). Similarly, the exhaust system (**162**) is located above the power source (**36**) to reduce the likelihood of the exhaust system (**162**) becoming blocked with slurry (**50**).

[0041] As shown, the fuel reservoir (**164**) is provided at least partially below the deck (**34**) of the vessel (**12**) to allow access to the fuel reservoir (**164**), while still providing the agitator (**10**) with a low center of gravity to increase the stability of the agitator (**10**).

[0042] Although the invention has been described with respect to a preferred embodiment thereof, it is to be understood that it is not to be so limited since changes and modifications can be made therein which are within the full, intended scope of this invention as defined by the appended claims.

What is claimed is:

1. A floating slurry agitator comprising:
(a) a floating vessel;
(b) a power source provided on the vessel;
(c) a slurry pump coupled to the power source;
(d) a slurry intake coupled to the slurry pump;
(e) a first slurry output coupled to the slurry pump;
(f) a second slurry output coupled to the slurry pump; and
(g) a steering control coupled to the first slurry output.

2. The floating slurry agitator of claim **1**, further comprising a wireless remote control coupled to the steering control.

3. The floating slurry agitator of claim **2**, wherein the steering control comprises a hydraulic cylinder coupled between the vessel and the first slurry output.

4. The floating slurry agitator of claim **3**, wherein the second slurry output is pivotably coupled to the vessel.

5. The floating slurry agitator of claim **1**, further comprising a third slurry output coupled to the slurry pump.

6. The floating slurry agitator of claim **5**, wherein the second slurry output is directed port, and wherein the third slurry output is directed starboard.

7. The floating slurry agitator of claim **6**, wherein the slurry intake is positioned between the first slurry output and the second slurry output.

8. The floating slurry agitator of claim **7**, wherein the second slurry output and the third slurry output are pivotably coupled to the vessel.

9. The floating slurry agitator of claim **8**, further comprising a wireless remote control coupled to the steering wheel.

10. The floating slurry agitator of claim **1**, wherein the pump has a throughput capacity of at least four thousand liters per minute.

11. The floating slurry agitator of claim **1**, wherein the pump has a throughput capacity of at least eight thousand liters per minute.

12. The floating slurry agitator of claim **1**, wherein the floating vessel is provided on a manure lagoon.

13. The floating slurry agitator of claim **1**, wherein the power source is a diesel engine.

14. A liquid manure agitator comprising:
(a) a floating vessel;
(b) a power source provided on the vessel;
(c) a liquid manure pump coupled to the power source;
(d) a liquid manure intake coupled to the liquid manure pump;
(e) a first liquid manure nozzle coupled to the liquid manure pump;
(f) a second liquid manure nozzle coupled to the liquid manure pump; and
(g) a steering control coupled to the first liquid manure nozzle.

15. The liquid manure agitator of claim **14**, further comprising a wireless remote control coupled to the steering control.

16. The liquid manure agitator of claim **14**, wherein the second liquid manure nozzle is directed toward the liquid manure intake.

17. The liquid manure agitator of claim **14**, further comprising a third liquid manure nozzle coupled to the liquid manure pump.

18. The liquid manure agitator of claim **17**, wherein the second liquid manure nozzle is directed port and wherein the third liquid manure nozzle is directed starboard.

19. The liquid manure agitator of claim **18**, wherein the liquid manure intake is positioned between the first liquid manure nozzle and the second liquid manure nozzle.

20. A liquid manure agitator comprising:
(a) a frame;
(b) a floatation device coupled to the frame;
(c) a power source coupled to the frame;
(d) a liquid manure pump coupled to the power source;
(e) a liquid manure intake coupled to the liquid manure pump;
(f) a first liquid manure nozzle coupled to the liquid manure pump and positioned stern of the liquid manure intake;
(g) a steering control coupled to the first liquid manure nozzle;
(h) a second liquid manure nozzle coupled to the liquid manure pump and positioned aft of the first liquid manure nozzle wherein the second manure nozzle is directed port;
(i) a third liquid manure nozzle coupled to the liquid manure pump and positioned aft of the first liquid manure nozzle wherein the third manure nozzle is directed starboard; and
(j) a wireless remote control coupled to the steering control.

* * * * *

EXHIBIT B

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(54) **ALL-TERRAIN HOSTILE ENVIRONMENT VEHICLE**

(76) Inventor: **Brian E. Carrier**, Wyoming, IL (US)

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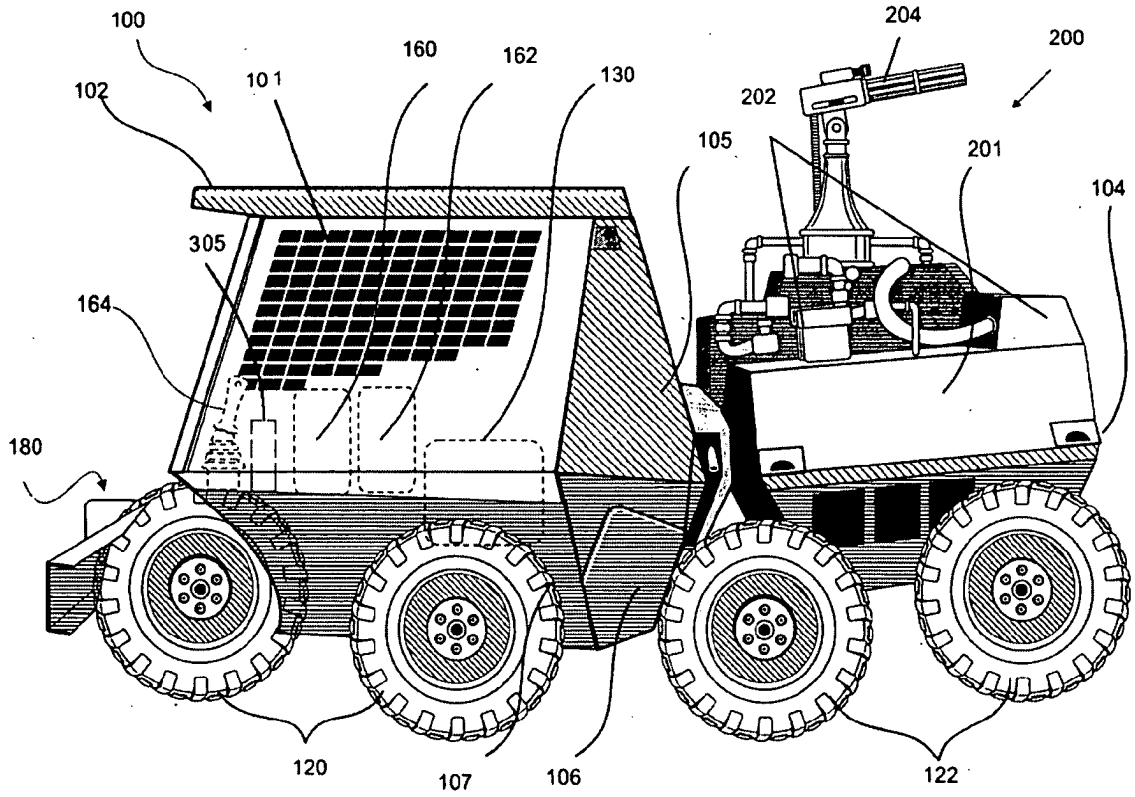
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(57) **ABSTRACT**

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.



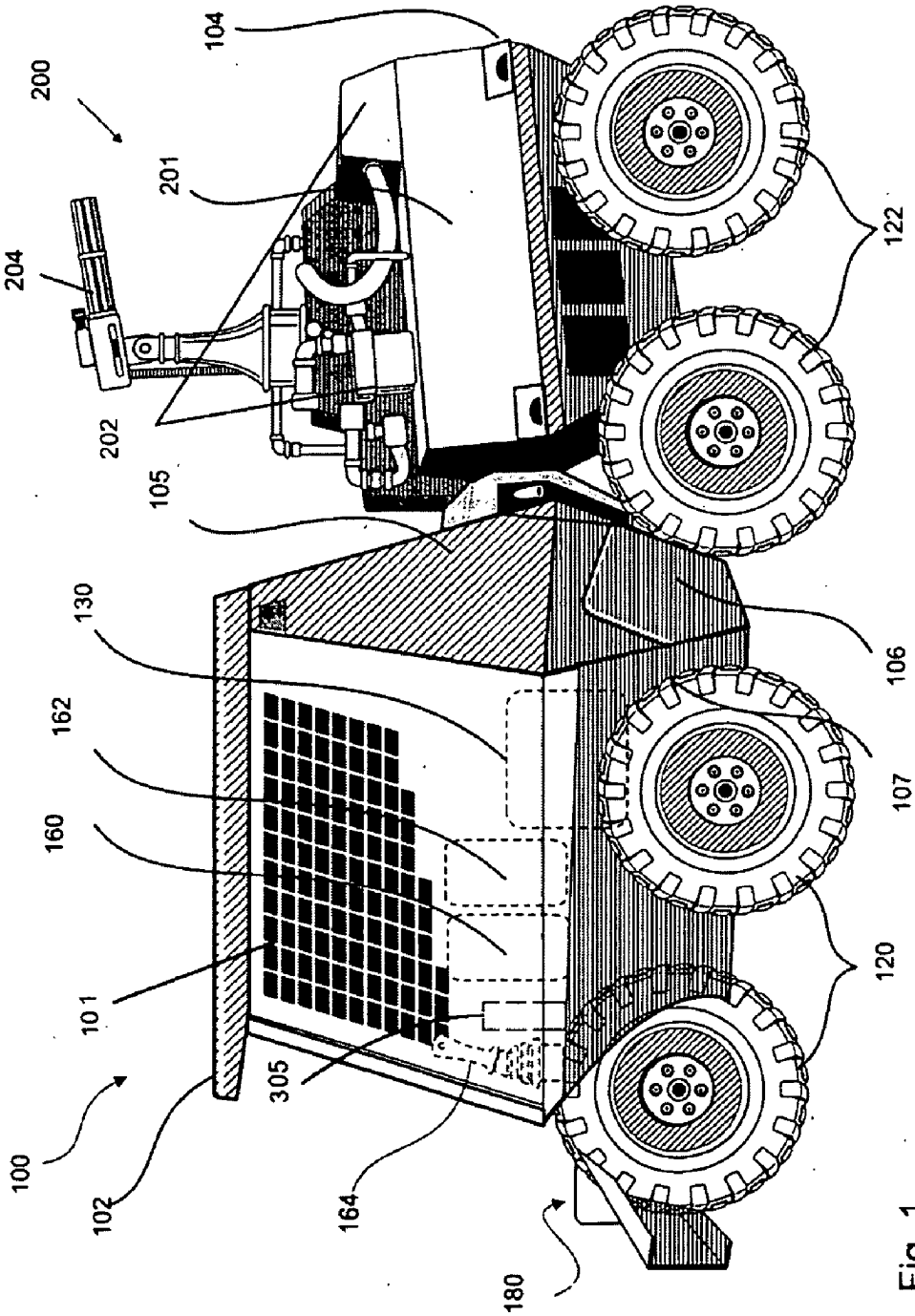

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Fig. 1

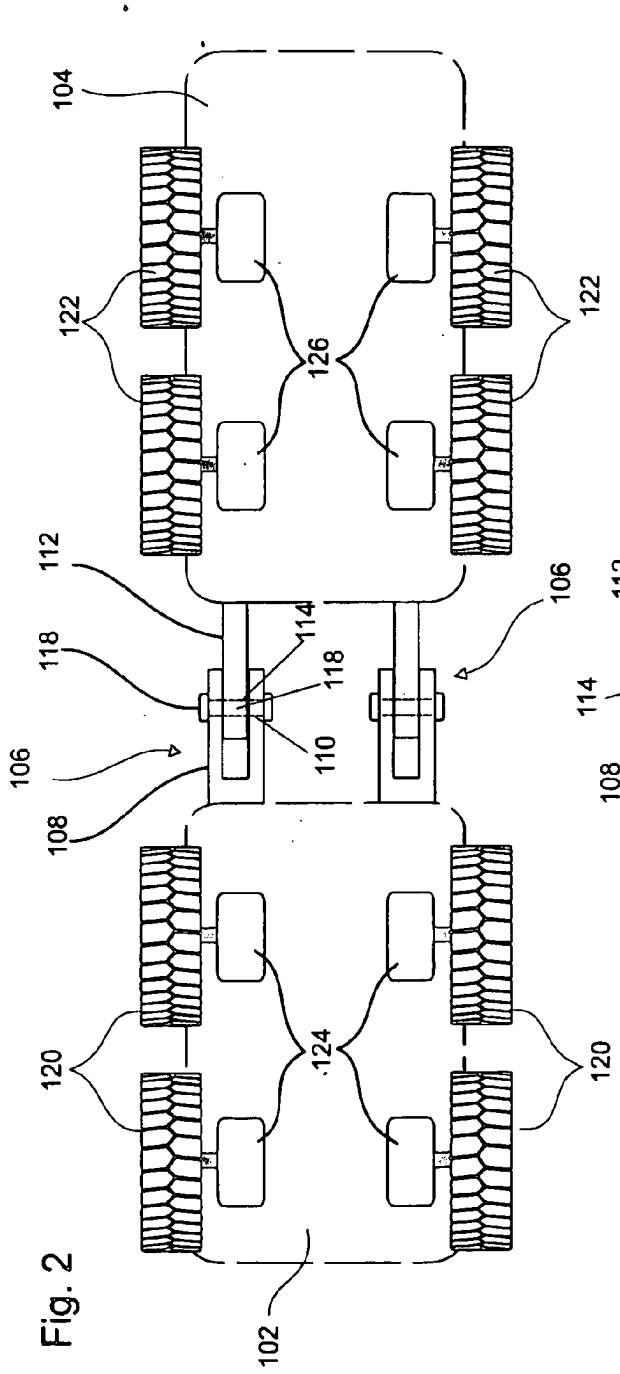

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Fig. 2

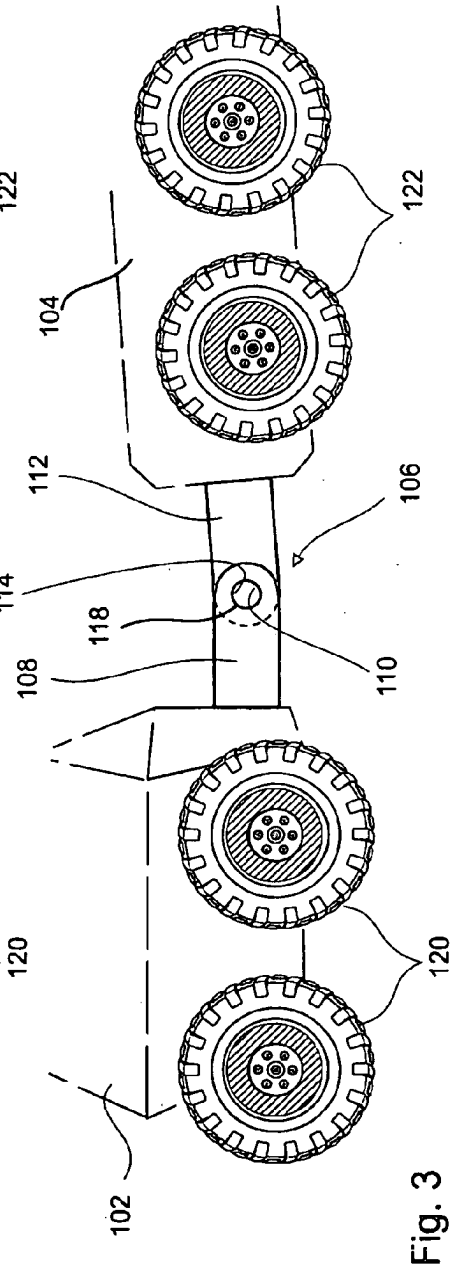

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Fig. 3