

(19)



(11)

**EP 2 774 664 A3**

(12)

**EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**29.10.2014 Bulletin 2014/44**

(51) Int Cl.:  
**A63H 11/02** (2006.01)      **A63H 17/00** (2006.01)  
**A63H 17/26** (2006.01)      **A63H 18/00** (2006.01)  
**A63H 17/42** (2006.01)      **A63H 18/16** (2006.01)  
**A63H 29/22** (2006.01)      **A63H 29/00** (2006.01)  
**A63H 18/02** (2006.01)      **A63H 18/12** (2006.01)

(43) Date of publication A2:  
**10.09.2014 Bulletin 2014/37**

(21) Application number: **14166986.1**

(22) Date of filing: **13.01.2012**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

(72) Inventors:  
 • **Mimlitch, Robert H. III**  
**Rowlett, TX Texas 75088 (US)**  
 • **Norman, David Anthony**  
**Greenville, TX Texas 75402 (US)**  
 • **Needle, Gregory E.**  
**Rockwall, TX Texas 75087 (US)**  
 • **Olivera, Raul**  
**Greenville, TX Texas 75402 (US)**

(30) Priority: **04.10.2011 US 201161543047 P**  
**28.11.2011 US 201113305613**  
**14.12.2011 US 201113325781**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:  
**12151079.6 / 2 578 282**

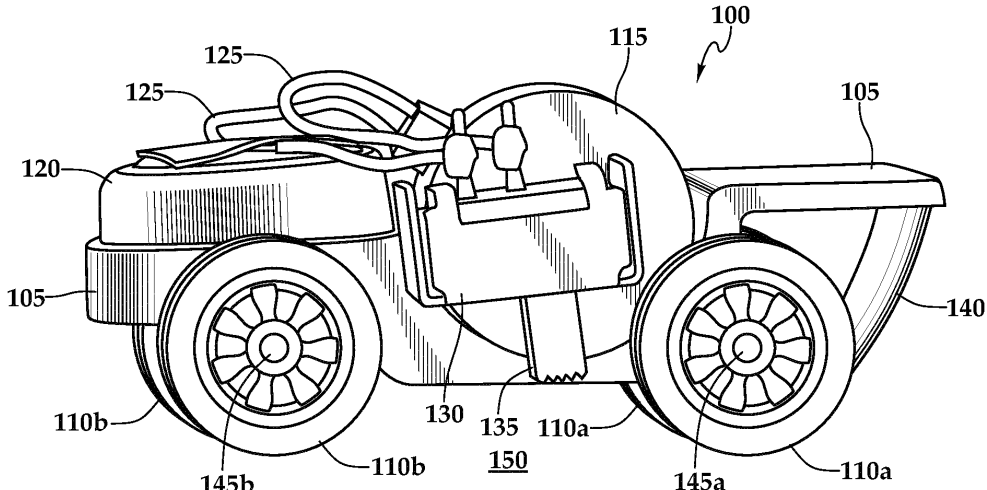
(74) Representative: **Peterreins, Frank et al**  
**Fish & Richardson P.C.**  
**Highlight Business Towers**  
**Mies-van-der-Rohe-Strasse 8**  
**80807 München (DE)**

(71) Applicant: **Innovation First, Inc.**  
**Greenville, TX 75402 (US)**

(54) **Autonomous vehicle system**

(57) An apparatus includes a housing, a rotational motor situated within the housing, an eccentric load adapted to be rotated by the rotational motor, and a plurality of legs each having a leg base and a leg tip at a distal end relative to the leg base. The legs are coupled to the housing at the leg base and include at least one

driving leg constructed from a flexible material and configured to cause the apparatus to move in a direction generally defined by an offset between the leg base and the leg tip as the rotational motor rotates the eccentric load.



**Fig.1**

**EP 2 774 664 A3**



EUROPEAN SEARCH REPORT

Application Number  
EP 14 16 6986

5

10

15

20

25

30

35

40

45

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 2 040 653 A5 (CREMIEUX MAX) 22 January 1971 (1971-01-22)	1-3,5,7,8	INV. A63H11/02 A63H17/00 A63H17/26 A63H18/00 A63H17/42 A63H18/16 A63H29/22 A63H29/00 A63H18/02 A63H18/12
Y	* page 1 - page 2, line 10 * * page 3, line 20 - page 5, line 13; figures *	4,6,9-15	
X	----- US 3 196 580 A (RAKESTRAW ROBERT G) 27 July 1965 (1965-07-27)	1-3,11	
Y	* columns 1-2; figure 3 * ----- US 2 167 985 A (EUGENE LEVAY) 1 August 1939 (1939-08-01)	4,15	
Y	* page 2, right-hand column, lines 11-16; figures 9-10 * ----- FR 2 358 174 A1 (DEMERSON JEAN [FR]) 10 February 1978 (1978-02-10)	6,9,11	
A	* page 1, line 38 - page 3; figures * ----- US 5 722 872 A (SIMMONS DONALD [US] ET AL) 3 March 1998 (1998-03-03)	10	
Y	* column 2, line 58 - column 3, line 2; figures 2,3 * ----- US 3 483 654 A (BRANCHE HARVEY W LA ET AL) 16 December 1969 (1969-12-16)	12	
Y	* claim 11; figures * ----- EP 1 849 508 A1 (HAJIME CORP [JP]) 31 October 2007 (2007-10-31)	13,14	
A	* paragraphs [0041], [0042] * ----- DE 20 2010 013574 U1 (INNOVATION FIRST INC [US]) 2 December 2010 (2010-12-02)	15	
	* paragraphs [0056], [0057]; figures 3b,3c * -----		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 September 2014	Examiner Bagarry, Damien
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	

EPO FORM 1503 03.02 (P04CO1)

2

50

55

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 14 16 6986

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-09-2014

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2040653 A5	22-01-1971	NONE	
US 3196580 A	27-07-1965	NONE	
US 2167985 A	01-08-1939	NONE	
FR 2358174 A1	10-02-1978	NONE	
US 5722872 A	03-03-1998	NONE	
US 3483654 A	16-12-1969	NONE	
EP 1849508 A1	31-10-2007	EP 1849508 A1	31-10-2007
		JP 4289677 B2	01-07-2009
		JP 2006212231 A	17-08-2006
		US 2008146115 A1	19-06-2008
		WO 2006082666 A1	10-08-2006
DE 202010013574 U1	02-12-2010	AT 542579 T	15-02-2012
		AT 543547 T	15-02-2012
		AT 544496 T	15-02-2012
		AT 549066 T	15-03-2012
		AT 549067 T	15-03-2012
		CN 102137698 A	27-07-2011
		CN 102256677 A	23-11-2011
		CN 102316948 A	11-01-2012
		CN 202427162 U	12-09-2012
		CN 202666393 U	16-01-2013
		CN 203154804 U	28-08-2013
		CN 203196307 U	18-09-2013
		DE 102010046440 A1	14-04-2011
		DE 102010046441 A1	07-04-2011
		DE 102010046509 A1	07-04-2011
		DE 102010046510 A1	31-03-2011
		DE 102010046511 A1	31-03-2011
		DE 102010046513 A1	04-08-2011
		DE 202010013574 U1	02-12-2010
		DE 202010013575 U1	02-12-2010
		DE 202010013576 U1	02-12-2010
		DE 202010013578 U1	02-12-2010
		DE 202010013579 U1	02-12-2010
		DE 202010013581 U1	02-12-2010
		DK 2301638 T3	02-07-2012
		DK 2301640 T3	25-06-2012
		DK 2301643 T3	07-05-2012
		DK 2484418 T3	24-03-2014

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 14 16 6986

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-09-2014

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 2301638 A1	30-03-2011
		EP 2301639 A1	30-03-2011
		EP 2301640 A1	30-03-2011
		EP 2301641 A1	30-03-2011
		EP 2301642 A1	30-03-2011
		EP 2301643 A1	30-03-2011
		EP 2480300 A1	01-08-2012
		EP 2480301 A1	01-08-2012
		EP 2484418 A1	08-08-2012
		EP 2612695 A1	10-07-2013
		ES 2381247 T3	24-05-2012
		ES 2381891 T3	01-06-2012
		ES 2381994 T3	04-06-2012
		ES 2383880 T3	27-06-2012
		ES 2383881 T3	27-06-2012
		ES 2387608 T3	27-09-2012
		ES 2460115 T3	13-05-2014
		HK 1150800 A1	27-07-2012
		HK 1150801 A1	21-09-2012
		HK 1150802 A1	15-06-2012
		HK 1150803 A1	10-08-2012
		HK 1150804 A1	15-06-2012
		HK 1150989 A1	08-06-2012
		HK 1160062 A1	23-05-2014
		JP 2013505785 A	21-02-2013
		JP 2013505787 A	21-02-2013
		JP 2013505790 A	21-02-2013
		KR 20120085908 A	01-08-2012
		KR 20120087906 A	07-08-2012
		KR 20120088685 A	08-08-2012
		KR 20120092576 A	21-08-2012
		PL 2301643 T3	31-07-2012
		PT 2301638 E	28-05-2012
		PT 2301640 E	28-05-2012
		PT 2301643 E	23-04-2012
		PT 2484418 E	31-03-2014
		RU 2012111343 A	27-09-2013
		RU 2012111345 A	27-09-2013
		RU 2012111347 A	27-09-2013
		TW 201116326 A	16-05-2011
		US 2011028069 A1	03-02-2011
		US 2011076914 A1	31-03-2011
		US 2012015585 A1	19-01-2012
		WO 2011038266 A1	31-03-2011
		WO 2011038268 A1	31-03-2011
		WO 2011038271 A1	31-03-2011

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 16 6986

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-09-2014

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		WO 2011038273 A1	31-03-2011
		WO 2011038274 A1	31-03-2011
		WO 2011038281 A1	31-03-2011

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82