(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 May 2017 (11.05.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/075665 A1

(51) International Patent Classification:
B60B 39/12 (2006.01)

(21) International Application Number:
PCT/AU2016/051051

(22) International Filing Date:
4 November 2016 (04.11.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2015904551 6 November 2015 (06.11.2015) AU

(71) Applicant: **MAXTRAX AUSTRALIA PTY LTD** [AU/AU]; c/- Level 32, 239 George Street, Brisbane, Queensland 4000 (AU).

(72) Inventors: **MCCARTHY, Bradley John**; c/- Level 32, 239 George Street, Brisbane, Queensland 4000 (AU). **DAVIDSON, Neil**; c/- Level 32, 239 George Street, Brisbane, Queensland 4000 (AU).

(74) Agent: **CULLENS**; Level 32, 239 George Street, Brisbane, Queensland 4000 (AU).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

(54) Title: VEHICLE RECOVERY LADDER

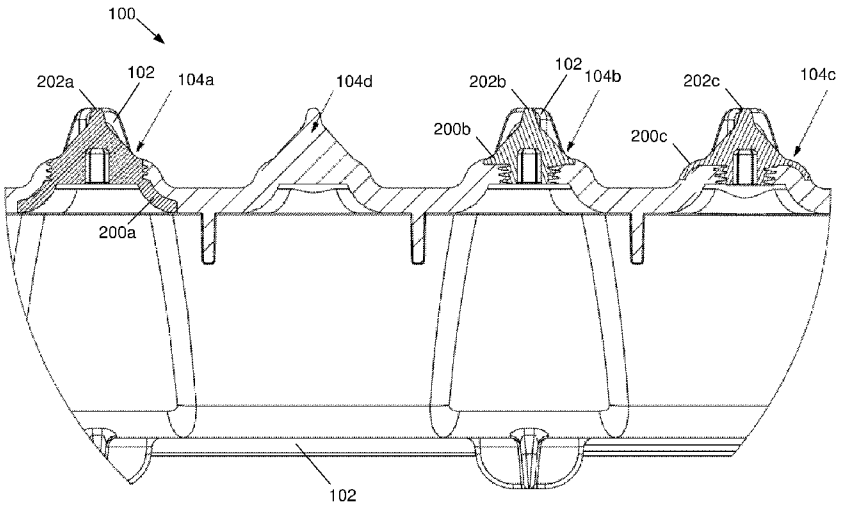

Figure 2

(57) Abstract: The present invention relates to a vehicle recovery ladder. The ladder includes a body and traction members for releasably fastening to the body. Advantageously, any damaged traction members may be readily released and replaced to maintain the performance of the ladder. The traction members may be bonded to the body with a chemical bond (e.g. crosslinked materials) and/or mechanical bond (e.g. engaged threads).

WO 2017/075665 A1

VEHICLE RECOVERY LADDER

TECHNICAL FIELD

[0001] The present invention relates to a vehicle recovery ladder. The present invention has particular, although not exclusive application to four-wheel drive (4WD) vehicles.

BACKGROUND

[0002] The reference to any prior art in this specification is not, and should not be taken as an acknowledgement or any form of suggestion that the prior art forms part of the common general knowledge.

[0003] Four-wheel drive (4WD) vehicles invariably become stuck in sand and mud. Traditionally, shovels were used to dig and extricate stuck 4WD vehicles. Alternatively, timber could be jammed beneath tyres in an attempt to gain more wheel traction.

[0004] A known vehicle recovery ladder disclosed in AU 2010100831 provides improved traction when extricating vehicles. Advantageously, the ladder is light-weight being molded from polymeric material and includes traction members to assist the wheel in climbing out of the mire. However, the Applicant has perceived that the traction members can wear or melt in extreme circumstances, such as the spinning of a wheel, which can severely hamper the ongoing performance of the ladder.

[0005] Embodiments of the present invention provide an improved vehicle recovery ladder.

SUMMARY OF THE INVENTION

[0006] According to one aspect of the present invention, there is provided a vehicle recovery ladder including:

a body;

traction members for releasably fastening to the body.

[0007] Advantageously, any damaged traction members may be readily released and replaced to maintain the performance of the ladder.

[0008] The traction members may be bonded to the body with a chemical and/or mechanical bond.

[0009] The traction members may be configured to not damage the tyre during use. Preferably, the traction members are less durable than a tyre so as to sustain damage before the comparatively more expensive tyre. The traction members may include polymeric material (e.g. elastomer, polyurethane, thermoplastic, nylon). The body may also include polymeric material (e.g. elastomer, polyurethane, thermoplastic, nylon). The traction members may include metal material (e.g. metal alloy), ceramic material or rubber material. In one embodiment, the body and the traction members are each intergrally formed (e.g. injection molded) from the same material.

[00010] Each traction member may include a rotational release means for rotationally releasing the traction member from the body. The rotational release means may include a thread. The rotational release means may include a tool recess for receiving a release tool. The recess may be hexagonal, pentagonal, octagonal, square, slotted, cross or star shaped.

[00011] The ladder may include locks for locking the traction members to the body. Each traction member may include an inhibiter for inhibiting unintentional release of the traction member from the body. The inhibitor may include one or more formations (e.g. tongue, groove, etc.). The inhibitor may include a tongue or groove.

[00012] The traction members may be released from the rear of the ladder. Alternatively, the traction members may be released from the top of the ladder. Each traction member may include a skirt from which a tooth extends. Each traction member may be over-molded. Each traction member may include a thread located either above or below the skirt.

[00013] According to another aspect of the present invention, there is provided a traction member for a vehicle recovery ladder, the traction member including:

release means for releasing the traction member from the body.

[00014] The release means may include rotation release means for releasing the traction member

[00015] According to another aspect of the present invention, there is provided a method for repairing a damaged traction member of a vehicle recovery ladder, the method involving:

releasing the traction member from a body of the ladder.

[00016] The step of releasing may involve rotating the traction member.

[00017] According to another aspect of the present invention, there is provided a vehicle recovery ladder including:

a body;

traction members bonded to the body.

[00018] The bonding may form a chemical and/or mechanical bond. The chemical bond may be formed by crosslinking of body and traction member materials. The chemical bond may be broken to release the traction members from the body. The mechanical bond may include engaged threads.

[00019] According to another aspect of the present invention, there is provided a method of forming a vehicle recovery ladder, the method including the steps of:

locating traction members in a mold; and

molding a body to form a bond with the traction members.

[00020] The method may involve molding the traction members in another mold. The traction members located in the mold may be set prior to molding the body. The traction members may have a lower melting point than the body to facilitate chemical bonding between the traction members and the body.

[00021] Any of the features described herein can be combined in any combination with any one or more of the other features described herein within the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[00022] Preferred features, embodiments and variations of the invention may be discerned from the following Detailed Description which provides sufficient information for those skilled in the art to perform the invention. The Detailed Description is not to be regarded as limiting the scope of the preceding Summary of the Invention in any way. The Detailed Description will make reference to a number of drawings as follows:

[00023] Figure 1a is a plan view of a vehicle ladder in accordance with an embodiment of the present invention;

[00024] Figure 1b is a side sectional view of the vehicle ladder of Figure 1a;

[00025] Figure 1c is a side view of the vehicle ladder of Figure 1a;

[00026] Figure 2 is a close-up sectional view of the circular inset in Figure 1a showing various types of traction members in accordance with embodiments of the present invention;

[00027] Figure 3a is an upper perspective view of a first traction member shown in Figure 2;

[00028] Figure 3b is a lower perspective view of a first traction member shown in Figure 2;

[00029] Figure 4a is an upper perspective view of a second traction member shown in Figure 2;

[00030] Figure 4b is a lower perspective view of a second traction member shown in Figure 2;

[00031] Figure 5a is an upper perspective view of a third traction member shown in Figure 2; and

[00032] Figure 5b is a lower perspective view of a third traction member shown in Figure 2.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[00033] According to an embodiment of the present invention, there is provided a vehicle recovery ladder 100 as shown in Figure 1. The ladder includes an elongate molded body 102, and molded traction members 104 that are releasably fastened to the body 104. The traction members 104 are bonded to the body 102 with a chemical and mechanical bond formed during molding. Advantageously, any damaged traction members 104 can be readily released and replaced to maintain the performance of the ladder 100.

[00034] The traction members 104 are normally less durable than a vehicle tyre so as to sustain damage before the comparatively more expensive tyre. The traction members 104 are formed from polymeric material (e.g. elastomer, polyurethane, thermoplastic, nylon). The body 102 is also formed from polymeric material (e.g. elastomer, polyurethane, thermoplastic, nylon). Typically, the body 102 and the traction members 104 are each intergrally formed (e.g. injection molded) from the same material.

[00035] Figure 2 shows four types of traction member 104, namely: novel first, second and third traction members 104a, 104b 104c; and a conventional traction member 104d integrally formed with the body 102. In practice, the ladder 100 would usually consist of the same type of traction member 104.

[00036] The traction members 104a, 104b 104c can be clearly seen in Figures 3 to 5 respectively. Each traction member 104 includes a rotational release for rotationally releasing the traction member 104 from the body 102. The rotational release includes a thread 300. The rotational release also includes a hexagonal tool recess 302 for receiving a release tool (e.g. Allan key).

[00037] The ladder 100 includes tongue-in-groove locks for locking the traction members 104 to the body 102. In particular, each traction member 104 includes an inhibiter 304 for inhibiting unintentional release of the traction member 104 from the body 102. The inhibiter 304a of the first traction member 104a is a topside tongue for sitting in a complementary groove of the body 102. The inhibiter 304b of the second traction member 104b is an underside groove in which a complementary tongue of the body 102 sits. The inhibiter 304c of the third traction member 104c is an underside groove in which a complementary tongue of the body 102 sits.

[00038] Returning to Figure 2, the traction member 104a is released from the rear or underside of the ladder 100. Alternatively, the traction members 104b, 104c are released from the topside of the ladder 100. Each traction member 104 includes a broad skirt 200 from which a tooth 202 upwardly extends. Each tooth is flanked by a pair of support fillets 306 (see. Fig 3). As can best be seen in Figure 2, each traction member 104 is over-molded by the body 102 to give increased breadth.

[00039] A method of forming the vehicle recovery ladder 100 is now described.

[00040] Firstly, the traction members 104 are injection molded in a traction member mold and permitted to set before removal.

[00041] Next, the set traction members 104 are positioned in a ladder mold.

[00042] Next, the body 102 is injection molded into the ladder mold and a chemical bond forms between the traction members 104 and body 102. A mechanical bond forms with engaging threads of the body 102 and traction members 104. As shown in Figure 2, the body 102 is overmolded over the embedded traction members 104 and forms a complementary thread with the traction members 104. The traction members 104 may have a lower melting point than the body 102 to facilitate chemical bonding between the traction members 104 and the body 102. The chemical bond is formed by crosslinking of the traction member and body materials.

[00043] In use, the chemical and mechanical bond is broken when releasing the traction members 104 from the body 102. Another traction member 104 can be threaded into the body 102 to replace a released traction member 104.

[00044] A person skilled in the art will appreciate that many embodiments and variations can be made without departing from the ambit of the present invention.

[00045] The traction members 104 may be formed from metal material (e.g. metal alloy), ceramic material or rubber material.

[00046] In one embodiment, the traction members 104 may be formed of a different material to the body 102 to suit the particular application (e.g. hard metal teeth for

military operations). The traction members 104 may be permanently bonded to, and not releasable from, the body 102.

[00047] The recess 302 may be pentagonal, octagonal, square, slotted, cross or star shaped.

[00048] In compliance with the statute, the invention has been described in language more or less specific to structural or methodical features. It is to be understood that the invention is not limited to specific features shown or described since the means herein described comprises preferred forms of putting the invention into effect.

[00049] Reference throughout this specification to 'one embodiment' or 'an embodiment' means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearance of the phrases 'in one embodiment' or 'in an embodiment' in various places throughout this specification are not necessarily all referring to the same embodiment. Furthermore, the particular features, structures, or characteristics may be combined in any suitable manner in one or more combinations.

The claims defining the invention are as follows:

1. A vehicle recovery ladder including:
a body;
traction members for releasably fastening to the body.

2. A vehicle recovery ladder as claimed in claim 1, wherein the traction members are bonded to the body with a chemical and/or mechanical bond.

3. A vehicle recovery ladder as claimed in claim 1, wherein the traction members are less durable than a tyre so as to sustain damage before the tyre.

4. A vehicle recovery ladder as claimed in claim 1, wherein the traction members or body include polymeric material

5. A vehicle recovery ladder as claimed in claim 1, wherein the traction members include metal material, ceramic material or rubber material.

6. A vehicle recovery ladder as claimed in claim 1, wherein the body and the traction members are each integrally formed from the same material.

7. A vehicle recovery ladder as claimed in claim 1, wherein each traction member includes a rotational release means for rotationally releasing the traction member from the body.

8. A vehicle recovery ladder as claimed in claim 7, wherein the rotational release means includes a thread.

9. A vehicle recovery ladder as claimed in claim 7, wherein the rotational release means includes a tool recess for receiving a release tool.

10. A vehicle recovery ladder as claimed in claim 1, wherein the ladder includes locks for locking the traction members to the body.

11. A vehicle recovery ladder as claimed in claim 1, wherein each traction member includes an inhibiter for inhibiting unintentional release of the traction member from the body.

12. A vehicle recovery ladder as claimed in claim 11, wherein the inhibitor includes one or more formations such as a tongue or groove.

13. A vehicle recovery ladder as claimed in claim 1, wherein the traction members are released from the rear or a top of the ladder.

14. A vehicle recovery ladder as claimed in claim 1, wherein each traction member includes a skirt from which a tooth extends.

15. A vehicle recovery ladder as claimed in claim 14, wherein each traction member includes a thread located either above or below the skirt.

16. A vehicle recovery ladder as claimed in claim 1, wherein each traction member is over-molded.

17. A traction member for a vehicle recovery ladder, the traction member including:
release means for releasing the traction member from the body.

18. A traction member as claimed in claim 17, wherein the release means includes rotation release means for releasing the traction member

19. A method for repairing a damaged traction member of a vehicle recovery ladder, the method involving:
releasing the traction member from a body of the ladder.

20. A method as claimed in claim 19, wherein the step of releasing involves rotating the traction member.

21. A vehicle recovery ladder including:
a body;
traction members bonded to the body.

22. A vehicle recovery ladder as claimed in claim 21, wherein the bonding forms a chemical and/or mechanical bond.

23. A vehicle recovery ladder as claimed in claim 22, wherein the chemical bond is formed by crosslinking of body and traction member materials.

24. A vehicle recovery ladder as claimed in claim 22, wherein the chemical bond can be broken to release the traction members from the body.

25. A vehicle recovery ladder as claimed in claim 22, wherein the mechanical bond includes engaged threads.

26. A method of forming a vehicle recovery ladder, the method including the steps of:
locating traction members in a mold; and
molding a body to form a bond with the traction members.

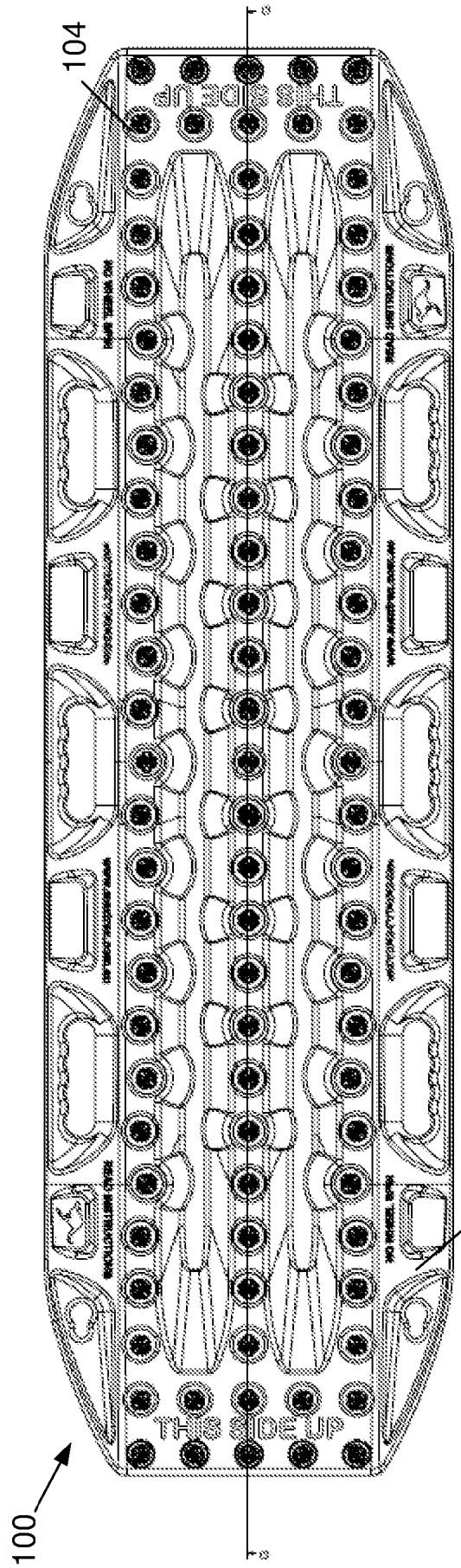

Figure 1a

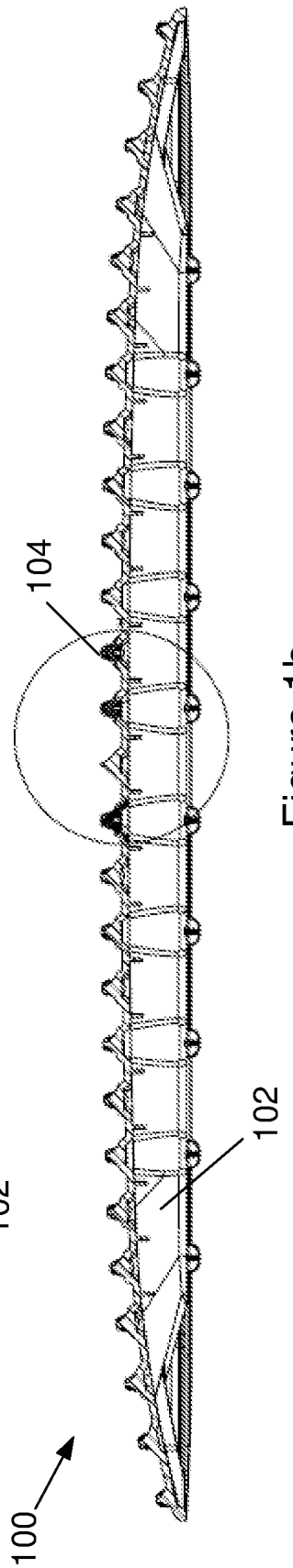

Figure 1b

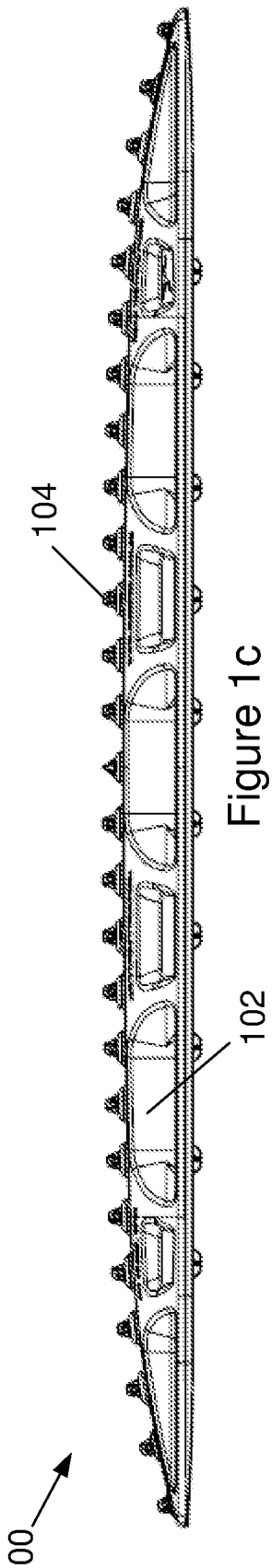

Figure 1c

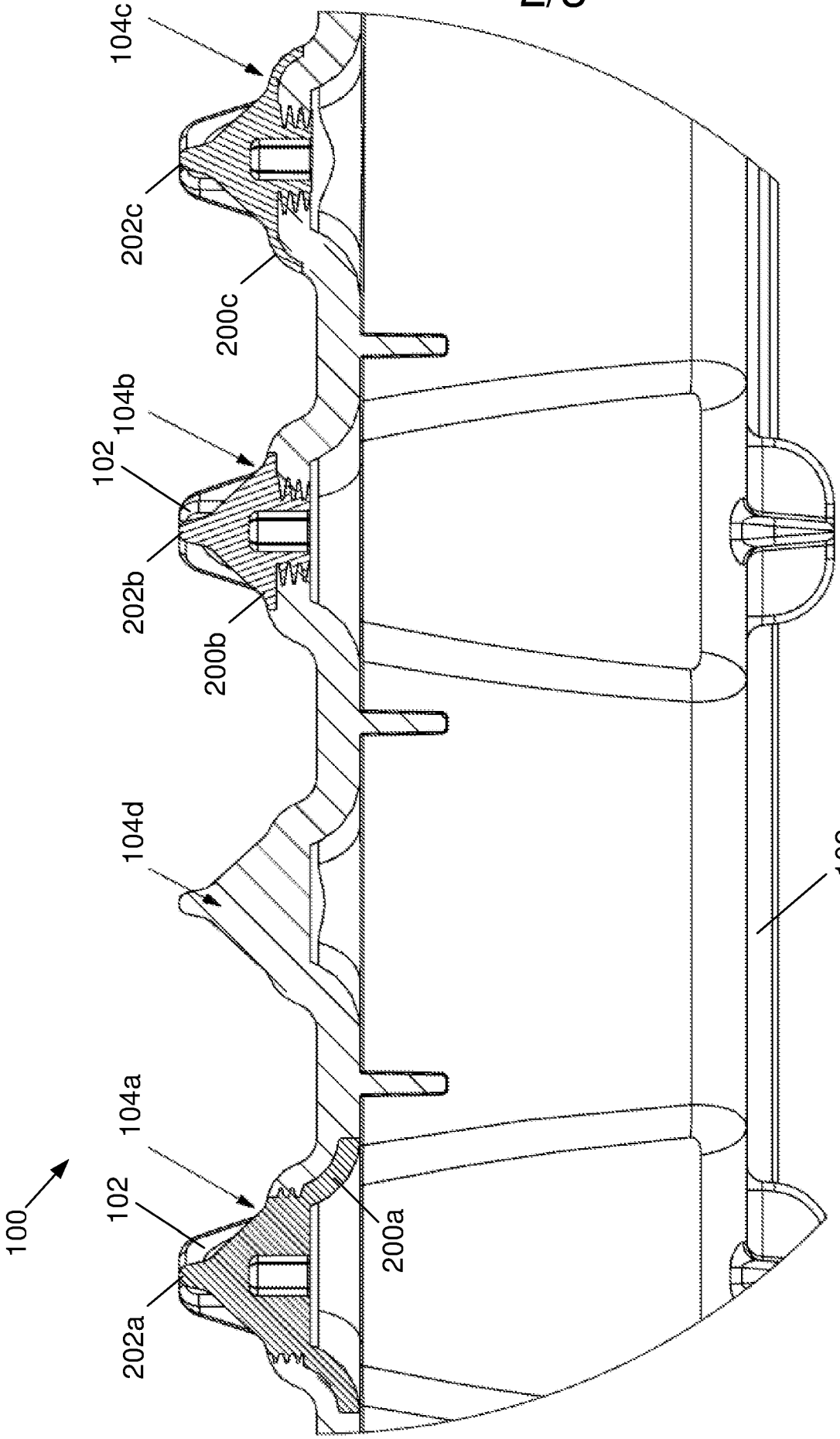
100
104a
102
202a
200a
104d
104b
202b
200b
102
104c
202c
200c
102

Figure 2

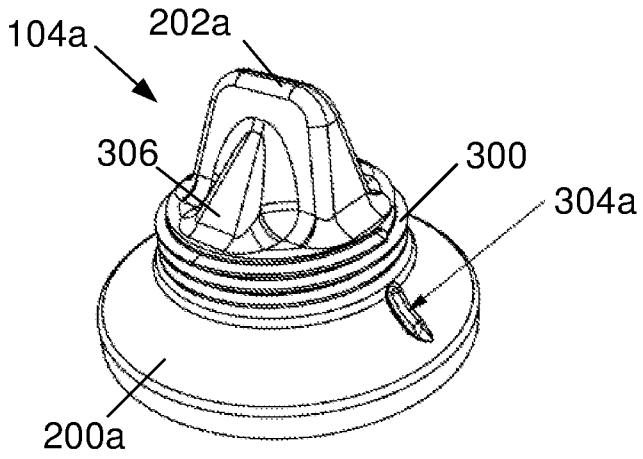

Figure 3a

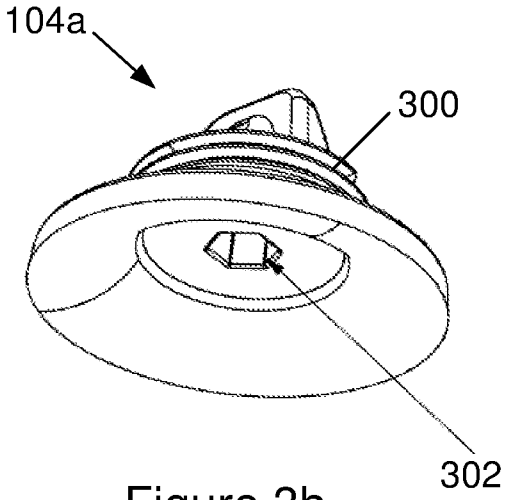

Figure 3b

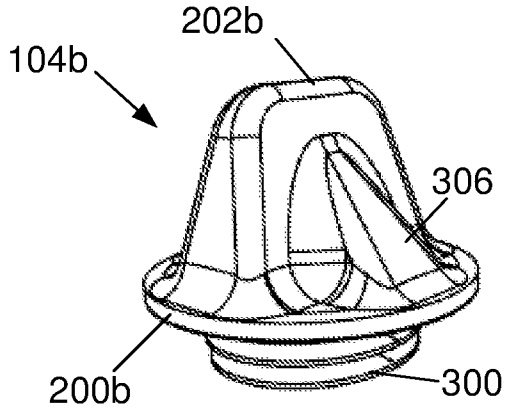

Figure 4a

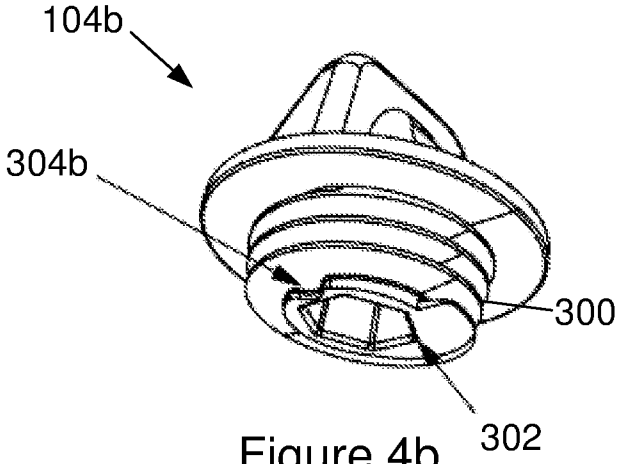

Figure 4b

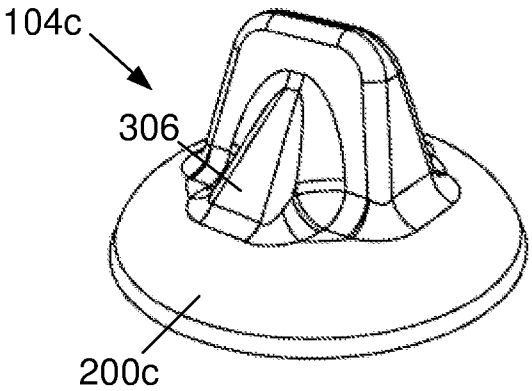

Figure 5a

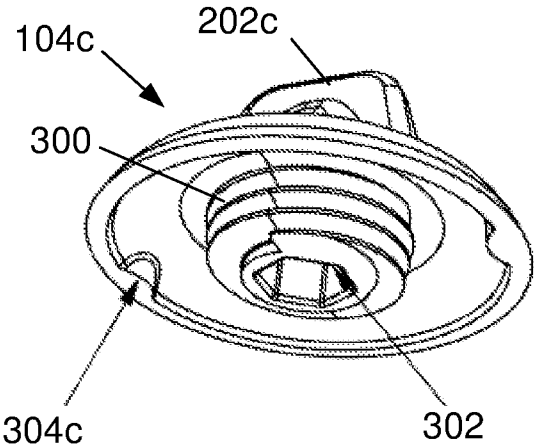

Figure 5b

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2016/051051

A. CLASSIFICATION OF SUBJECT MATTER

B60B 39/12 (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)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPIAP, EPODOC: IPC, CPC: B60B39. Keywords: release, detach, separate, disengage, disconnect, remove, change, swap, traction, grip, adhesion, stud, boss, teeth, tooth, project, protrude, lug, pin, cleat, friction, tread, engage, vehicle, recover, extricate, mud, sand, bogged, stuck, snow, truck, ute, utility, car, lorry, van, ladder, ramp, mat, extract, retrieve and like terms. Espace and Auspat applicant and inventor name searches. Google images: sand ladder, recovery ramp, recovery ramp exchange teeth, recovery tracks and like terms. Google Patents: vehicle recovery ladder and like terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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)

"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 January 2017	25 January 2017
Name and mailing address of the ISA/AU	**Authorised officer**
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustralia.gov.au	Gillian Thompson AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832405

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2016/051051

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
the subject matter listed in Rule 39 on which, under Article 17(2)(a)(i), an international search is not required to be carried out, including

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See Supplemental Box for Details

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-25

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		International application No. **PCT/AU2016/051051**
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	*Maxtrax Dentistry - tooth replacement* [retrieved from internet on 22 November 2016] <URL: http://www.pradopoint.com/showthread.php?35771-Maxtrax-Dentistry-tooth-replacement>, published on 15 June 2015. Images, posts #1, #4	1-5, 7-9, 13-25
X	US 3836075 A (BOTBOL) 17 September 1974 Figs. 1-6, col. 3 lines 15-23, 55-65	1, 2, 4-8, 13-15, 17-25
X	US 5538183 A (MCGEE) 23 July 1996 Figs. 1, 8, 10, 11A-11C	1, 2, 10-14, 17, 19, 21-24
A	AU 2013206349 A1 (BRADLEY MCCARTHY) 30 January 2014	
A	EP 1943110 B1 (MCCARTHY et al.) 18 September 2013	
A	US 4210280 A (REISNER) 01 July 1980	
A	US 8231066 B2 (MCCARTHY) 31 July 2012	

Supplemental Box

Continuation of: **Box III**

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

This Authority has found that there are different inventions based on the following features that separate the claims into distinct groups:

- Claims 1 to 25 are directed to a vehicle recovery ladder, a traction member for the vehicle recovery ladder and a method of repairing a vehicle recovery ladder.. The feature of the traction members being releasably fastened to the body of the vehicle recovery ladder is specific to this group of claims.

- Claim 26 is directed to a method of forming a vehicle recovery ladder.. The feature of locating traction members in a mould and moulding a body to form a bond with the traction members is specific to this group of claims.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature common to all the claimed inventions there is no unity of invention.

In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claimed inventions and therefore cannot provide the required technical relationship. The only feature common to all of the claimed inventions and which provides a technical relationship among them is vehicle recovery ladder including traction members.

However this feature does not make a contribution over the prior art because it is disclosed in:
D1 to D7

Therefore in the light of this document this common feature cannot be a special technical feature. Therefore there is no special technical feature common to all the claimed inventions and the requirements for unity of invention are consequently not satisfied *a posteriori*.

INTERNATIONAL SEARCH REPORT Information on patent family members	International application No. **PCT/AU2016/051051**

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document/s Cited in Search Report		**Patent Family Member/s**	
Publication Number	**Publication Date**	**Publication Number**	**Publication Date**
US 3836075 A	17 September 1974	US 3836075 A	17 Sep 1974
US 5538183 A	23 July 1996	US 5538183 A	23 Jul 1996
AU 2013206349 A1	30 January 2014	AU 2013206349 A1	30 Jan 2014
EP 1943110 B1	18 September 2013	EP 1943110 A1	16 Jul 2008
		EP 1943110 B1	18 Sep 2013
		AU 2006301867 A1	19 Apr 2007
		AU 2006301867 B2	08 Nov 2012
		AU 2012205168 A1	02 Aug 2012
		AU 2012205168 B2	31 Jan 2013
		NZ 566103 A	29 Jan 2010
		US 2008217077 A1	11 Sep 2008
		US 8231066 B2	31 Jul 2012
		WO 2007041802 A1	19 Apr 2007
US 4210280 A	01 July 1980	US 4210280 A	01 Jul 1980
		AU 522757 B2	24 Jun 1982
		AU 3966578 A	13 Mar 1980
		CA 1114852 A	22 Dec 1981
		DE 2847475 A1	31 Oct 1979
		FR 2424138 A1	23 Nov 1979
		GB 2019792 A	07 Nov 1979
		GB 2019792 B	28 Jul 1982
		IE 48030 B1	05 Sep 1984
		JP S54142749 A	07 Nov 1979
		NL 7810024 A	30 Oct 1979
		NO 790053 A	30 Oct 1979
US 8231066 B2	31 July 2012	US 2008217077 A1	11 Sep 2008
		US 8231066 B2	31 Jul 2012
		AU 2006301867 A1	19 Apr 2007
		AU 2006301867 B2	08 Nov 2012
		AU 2012205168 A1	02 Aug 2012
		AU 2012205168 B2	31 Jan 2013

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

INTERNATIONAL SEARCH REPORT Information on patent family members	International application No. **PCT/AU2016/051051**

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	**Publication Date**	**Publication Number**	**Publication Date**
		EP 1943110 A1	16 Jul 2008
		EP 1943110 B1	18 Sep 2013
		NZ 566103 A	29 Jan 2010
		WO 2007041802 A1	19 Apr 2007

End of Annex

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.