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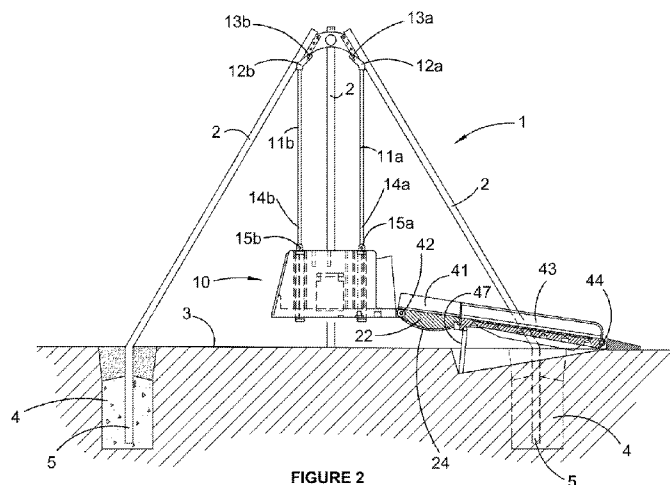
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
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UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, 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,
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Published:

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- (54) Title: A SWING APPARATUS FOR PERSONS CONFINED TO A WHEELCHAIR



- (57) Abstract: A swing apparatus (1) includes a body (10) adapted to accommodate a wheelchair. The body (10) is formed from moulded plastic and is suspended from a frame structure (2) for reciprocating motion by means of two pairs of substantially parallel arms (11a, 11b). One embodiment includes a first ramp member (41) attached to the body and a second ramp member (43) adapted to be attached to the ground. The ramp members are adapted to combine to form a ramp so as to enable wheelchair access to the body. Another embodiment includes a collapsible seating assembly mounted within the body comprising a pair of first members which are pivotally connected to opposing inner side walls of the body and rotatable between a substantially vertical position for storage and a substantially horizontal position for providing supporting surfaces to support a user of the swing in a seated position.



A SWING APPARATUS FOR PERSONS CONFINED TO A WHEELCHAIR

FIELD OF THE INVENTION

[0001] The present invention relates to playground apparatus, and in particular to a swing apparatus which may be used by a person confined to a wheelchair.

BACKGROUND OF THE INVENTION

[0002] Any discussion of the prior art throughout the specification should in no way be considered as an admission that such prior art is widely known or forms part of common general knowledge in the field.

[0003] In recent years, there has been an increasing awareness of the needs of physically and/or mentally handicapped persons. For example, whereas in the past there has been segregation of able-bodied and disabled children in schools, recently there has been a move towards integrating handicapped persons into the general community. Schools designated "special" have been established to permit both disabled and able-bodied children to coexist in an environment that is beneficial to both groups. Disabled children experience an environment that is similar to that which they will experience outside of school. Able-bodied children are given a chance to mingle with the physically disabled and become familiar with and understand various disabilities and the associated problems with which the disabled must contend.

[0004] Whilst there are many playgrounds available for use by able-bodied people, little consideration appears to have been given to the provision of playground facilities for persons confined to a wheelchair. Most playground equipment is made for able-bodied people and, in spite of the desire of disabled people to participate in playground activities, they are generally not able to do so due to a lack of suitable recreational equipment.

[0005] In the specification of PCT/AU00/01394 the inventor discloses a swing apparatus for persons confined to a wheelchair. The present invention is directed to improvements over the swing disclosed in the specification of PCT/AU00/01394, the contents of which are incorporated herein by way of cross reference.

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[0006] When designing a swing to accommodate a wheelchair not only is it necessary to ensure easy access for the wheelchair, operational safety is also an important consideration. In many jurisdictions it is necessary to ensure that the swing complies with certain design standards or criteria for operational safety. For example, it is necessary to ensure the swing has no entrapment points where a person, such as an infant or disabled person, can become caught beneath the path of the swing. Typically this requires that the swing is a certain minimum height above ground level.

SUMMARY OF THE INVENTION

[0007] The present invention is directed to providing swing apparatus which may be used by a person confined to a wheelchair and the object of the invention is to overcome or ameliorate at least one of the disadvantages of the prior art, or to at least provide a useful alternative.

[0008] To this end, a first aspect of the present invention provides a swing apparatus for persons confined to a wheelchair, said swing apparatus including:

- a body adapted to accommodate a wheelchair;
- a ramp so as to permit access to said body;
- said ramp comprising a first ramp member attached to said body and a second ramp member adapted to be attached to the ground;
- said first and second ramp members adapted to combine to form a ramp so as to enable wheelchair access to said body.

[0009] A second aspect of the present invention provides a swing apparatus for persons confined to a wheelchair, said swing apparatus including:

- a body adapted to accommodate a wheelchair, and
- a collapsible seating assembly mounted within the body of the swing;
- said seat assembly comprising a pair of first members which, in use, provide supporting surfaces to support a user of the swing in a seated position; said first members pivotally connected to opposing inner side walls of the body and rotatable between a substantially vertical position for storage and a substantially horizontal position for providing seating for a user.

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[0010] Unless the context clearly requires otherwise, throughout the description and the claims, the words “comprise”, “comprising”, and the like are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of “including, but not limited to”.

BRIEF DESCRIPTION OF DRAWINGS

[0011] A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

[0012] Figure 1 is a side elevation of a preferred embodiment of the swing apparatus according to the present invention, with the access ramp for the swing disconnected;

[0013] Figure 2 is a side elevation of a preferred embodiment of the swing apparatus according to the present invention, with the access ramp connected to permit ingress and egress of a wheelchair;

[0014] Figure 3 is a first perspective view of the body of the swing, illustrating the internal seat assembly;

[0015] Figure 4 is a second perspective view of the body of the swing, illustrating the access end of the body of the swing, with the pivotable end wall in a closed position;

[0016] Figure 5 is the same perspective view as Figure 4, illustrating the access end of the body of the swing, with the pivotable end wall shown in an open, access position to form a first ramp member and connected to a second ramp member to provide wheelchair access to the swing body;

[0017] Figure 6 is a perspective view of the body of the swing, illustrating the internal seat assembly;

[0018] Figure 7 is an enlarged perspective view partly illustrating the configuration of the internal seat assembly;

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[0019] Figure 8A to 8D is a series of elevation views illustrating the configuration of the internal seat assembly in its supporting and stowed positions;

[0020] Figure 9 is a side elevation of the body of the swing, with the access ramp connected to permit ingress and egress of a wheelchair; and

[0021] Figure 10 is a side elevation of the body of the swing, with the access ramp connected to permit ingress and egress of a wheelchair.

DESCRIPTION OF PREFERRED EMBODIMENT

[0022] Figure 1 depicts a preferred embodiment of the swing apparatus 1 according to the present invention. The apparatus includes a frame structure 2 which is suitably secured to the ground 3. In the arrangement depicted, the frame structure is secured to the ground by means of concrete footings 4 into which the lower ends 5 of the frame structure are set. However it is to be appreciated that other means of securing the frame structure to ground may be employed.

[0023] The swing apparatus 1 includes a body 10 adapted to accommodate a wheelchair. The swing body 10 is suspended from the frame structure for reciprocating motion by means of two pairs of substantially parallel arms 11a, 11b which are pivotally mounted at their respective upper ends 12a, 12b to mounting points 13a, 13b on the upper section of the frame structure. The lower ends 14a, 14b of the arms are pivotally connected to mounting points 15a, 15b on the swing body.

[0024] Figures 3 and 4 depict a preferred embodiment of the main body 10 of the swing apparatus. The body 10 is adapted to accommodate a wheelchair and includes a platform 16 upon which the wheelchair is carried when in use. Extending upwardly from the platform 16 are mutually opposing side walls 17, 18 respectively. Preferably the main body 10 is formed from a suitable moulded plastic so as to provide the necessary strength whilst also minimising weight. In the preferred embodiment the body 10 is of unitary construction, with the platform, side and rear walls being integrally formed. The body 10 may, for example, be formed by means of rotomoulding. Integrally formed ribbing 19 may be provided in one or more walls of the body so as to enhance the rigidity of the body.

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[0025] In the preferred embodiment depicted in Figures 2 and 3, the body of the swing comprises an open end 20 and a closed end 21. The closed end 21 has a pivoting end wall member 22 which is movable between a raised position and a lowered position. In its raised position the wall 22 acts to close one end of the body of the swing. In its lowered position the wall 22 acts as a ramp member to facilitate wheelchair ingress and egress. This feature will be described in greater detail below with reference to Figure 5.

[0026] As illustrated in Figures 2 & 4, the outer face 23 of the end wall 22 is provided with a compliant covering 24 to reduce the effect of impact and injury in the event that the swing contacts a person whilst in use. Similarly the outer faces of the opposing end 20 of the swing body are also provided with a similar covering 24.

[0027] With reference to Figures 6 to 8D, in accordance with one aspect of the present invention, the body of the swing 10 includes a seat assembly 30 which can be moved between a collapsed position and a raised position. Within the body 10 of the swing a collapsible seating arrangement is provided to provide seating for a user of the swing if desired. The seat assembly of the swing comprises a pair of first members 31a, 31b which, in use, provide supporting surfaces to support a user of the swing in a seated position. The first members 31a, 31b are pivotally connected to opposing inner side walls 17, 18 of the body and can rotate between a substantially vertical position for storage and a substantially horizontal position for providing seating for a user.

[0028] Each of the first members 31a, 31b is pivotally connected by means of hinge connections 32a, 32b to second member 33a, 33b. When in use the second members 33a, 33b are located in a substantially vertical position and act to support the first members 31a, 31b in a substantially horizontal position in order to provide seating for the user of the swing. The free ends 34a, 34b of the second members 33a, 33b are located between opposing lugs 35a, 35b extending from the floor of the body, which act to locate and retain the free ends in position when the second members are in their upright position.

[0029] When not in use, the first members fold down to a vertical position and are located within complementary recesses 36a, 36b in the inner side walls of the body of the swing. The second members fold down and are located in a complementary recess

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37 in the floor of the swing body. A drain channel 38 and drain hole 39 are provided in the recess in the floor of the swing body to enable water to drain from the body of the swing.

[0030] The ramp assembly of the swing will now be described with reference to Figures 5, 9 and 10. Preferably, the ramp comprises a first ramp member 41 carried on the swing body which forms an end wall 22 of the swing body. The end wall 22 is pivotally attached to the swing body along a transverse axis 42. The wall 22 can rotate about transverse axis 42 between an upright position where it acts as an end wall for the body of the swing, and a lowered position where it forms a ramp member to facilitate wheelchair access to the body of the swing. A second ramp member 43 is pivotally secured to the ground at one end 44. The opposing free end 45 of the ramp member 43 is adapted to engage with the free end 46 of end wall 22. A movable support member 47 provides support for the free end of the ramp member 43. When engaged, end wall 22 and ramp member 43 combine to form a ramp for accessing the body of the swing.

[0031] It has been found that a ramp angle in the range of 6 to 12° to the horizontal facilitates relatively easy wheelchair access up and down the ramp.

[0032] The ramp member 43 may be provided with biasing means which is configured so as to provide a biasing force which acts to reduce the weight load of the ramp thereby enabling a person to lift the ramp into engagement with the body of the swing more easily.

[0033] Advantageously, the present invention provides a swing apparatus which can be enjoyed by persons confined to a wheelchair and which reduces the risk of injury by ensuring the swing body is sufficiently clear of the ground to eliminate crush or entrapment points.

[0034] Although the invention has been described with reference to specific examples it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

CLAIMS:-

1. A swing apparatus for persons confined to a wheelchair, said swing apparatus including:
 - a body adapted to accommodate a wheelchair;
 - a ramp so as to permit access to said body;
 - said ramp comprising a first ramp member attached to said body and a second ramp member adapted to be attached to the ground;
 - said first and second ramp members adapted to combine to form a ramp so as to enable wheelchair access to said body.

2. A swing apparatus for persons confined to a wheelchair as claimed in claim 1, wherein the swing body is suspended from a frame structure for reciprocating motion by means of two pairs of substantially parallel arms which are pivotably mounted at first ends to mounting points on the frame structure and opposing ends of the arms are pivotally connected to mounting points on the swing body.

3. A swing apparatus for persons confined to a wheelchair as claimed in any one of claims 1 to 2, wherein the body is of unitary construction.

4. A swing apparatus for persons confined to a wheelchair as claimed in claim 3, wherein the body of the swing is formed from moulded plastic.

5. A swing apparatus for persons confined to a wheelchair as claimed in claim 1 wherein said second ramp member is provided with a biasing means which is configured so as to provide a biasing force which acts to reduce the weight load of said second ramp member thereby enabling a person to lift the ramp into engagement with the body of the swing more easily.

6. A swing apparatus for persons confined to a wheelchair as claimed in any one of claims 1 to 5 wherein said body of said swing comprises an open end and a closed end.

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7. A swing apparatus for persons confined to a wheelchair as claimed in 6 wherein said closed end has a pivoting end wall member movable between a raised position and a lowered position which forms said first ramp member.

8. A swing apparatus for persons confined to a wheelchair, said swing including:

a body adapted to accommodate a wheelchair, and
a collapsible seating assembly mounted within the body of the swing;
said seat assembly comprising a pair of first members which, in use, provide supporting surfaces to support a user of the swing in a seated position; said first members pivotally connected to opposing inner side walls of the body and rotatable between a substantially vertical position for storage and a substantially horizontal position for providing seating for a user.

9. A swing apparatus for persons confined to a wheelchair as claimed in claim 8 wherein said seat assembly further comprises a pair of second members pivotally connected to respective first members and which, when said seat assembly is in use, extend vertically to support said first members in a substantially horizontal position in order to provide seating for the user of the swing.

10. A swing apparatus for persons confined to a wheelchair as claimed in claim 9 wherein free ends of said second members are located between opposing lugs extending from the floor of the body, which act to locate and retain said free ends in position when said seat assembly is in use.

11. A swing apparatus for persons confined to a wheelchair as claimed in claim 10 wherein, when said seat assembly is not in use, said first members can be folded down to a vertical position and located within complementary recesses in the inner side walls of the body of the swing.

12. A swing apparatus for persons confined to a wheelchair as claimed in claim 11 wherein, when said seat assembly is not in use said second members can be folded down and located in a complementary recess in the floor of the swing body.

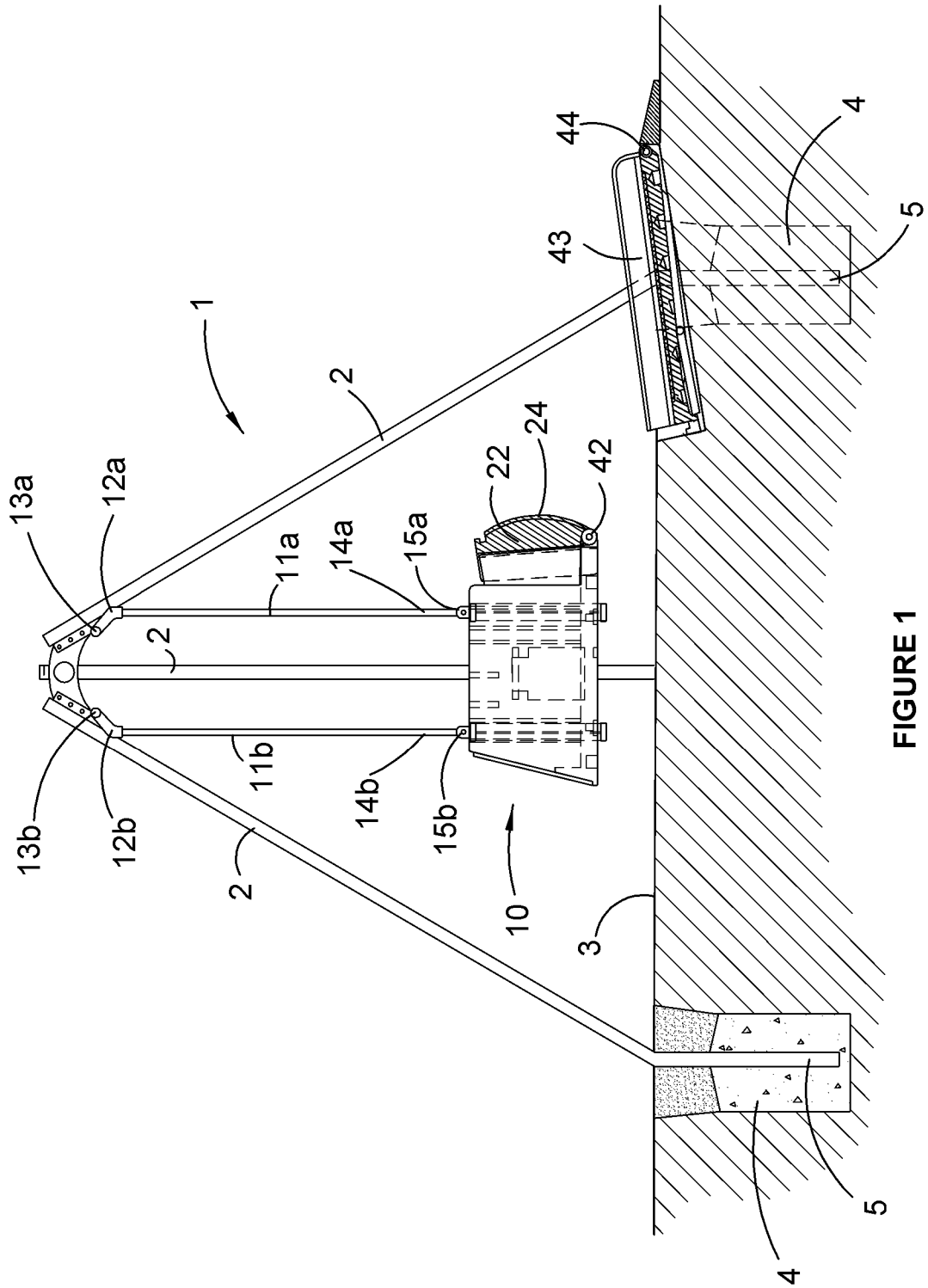


FIGURE 1

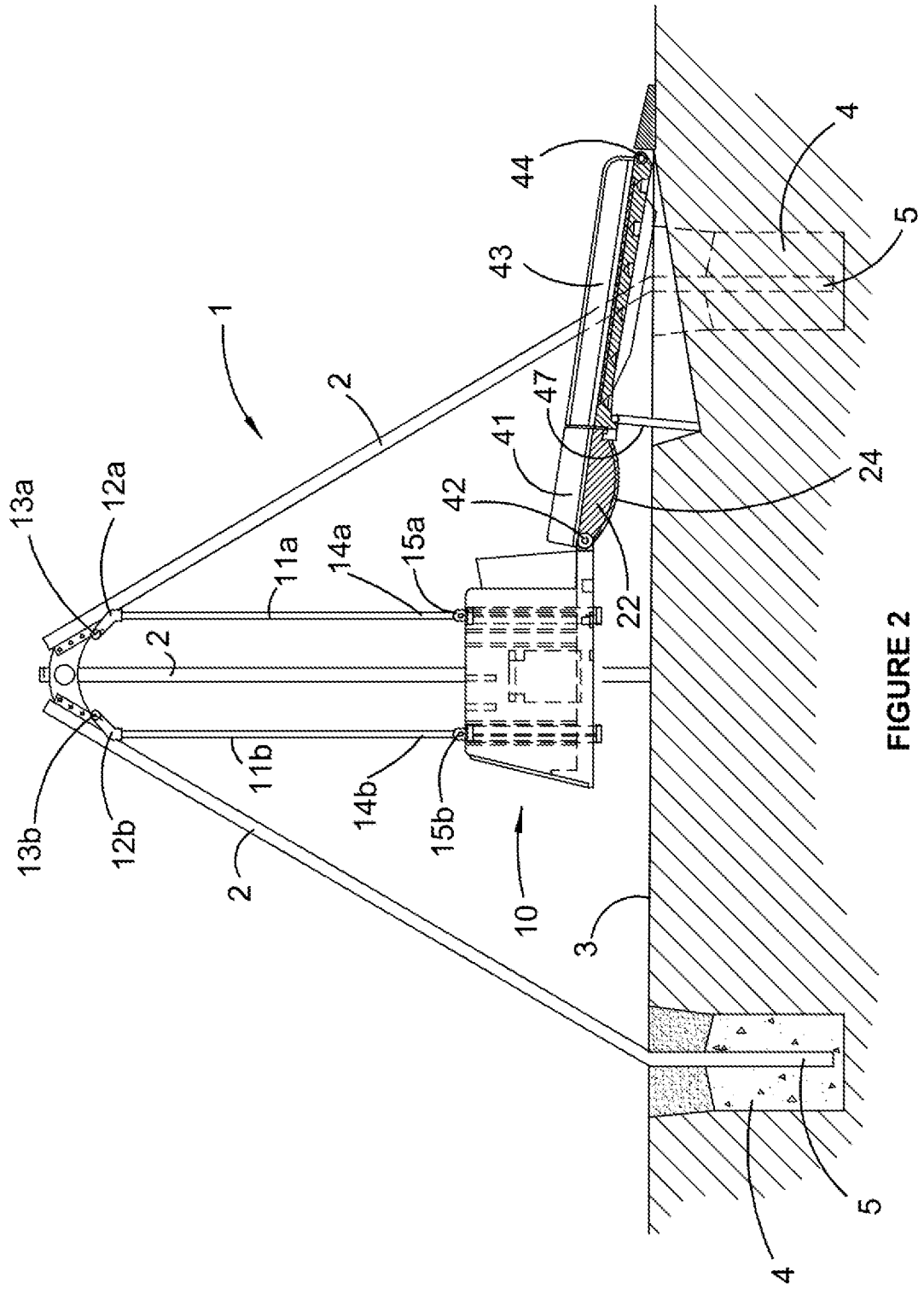


FIGURE 2

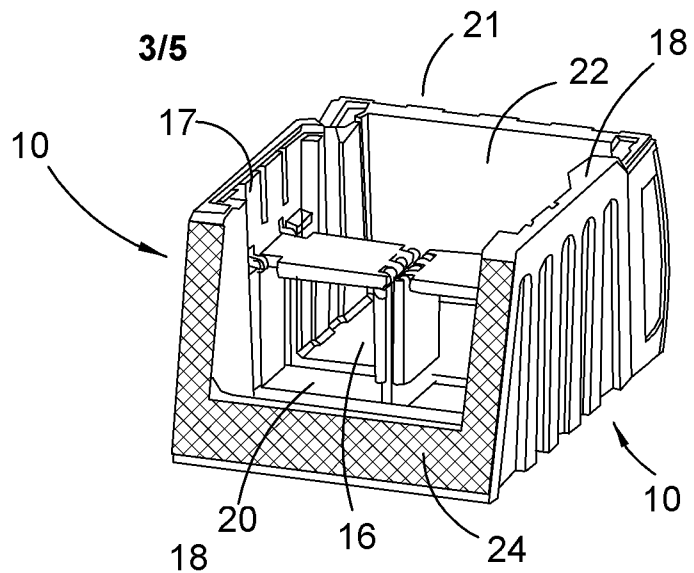


FIGURE 3

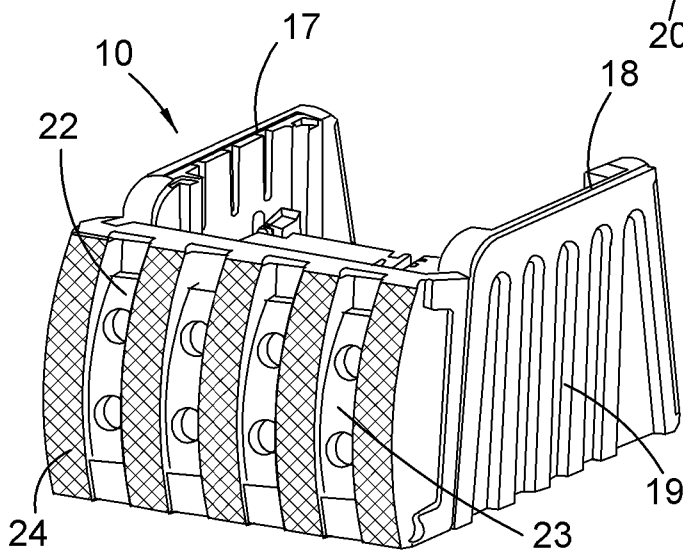


FIGURE 4

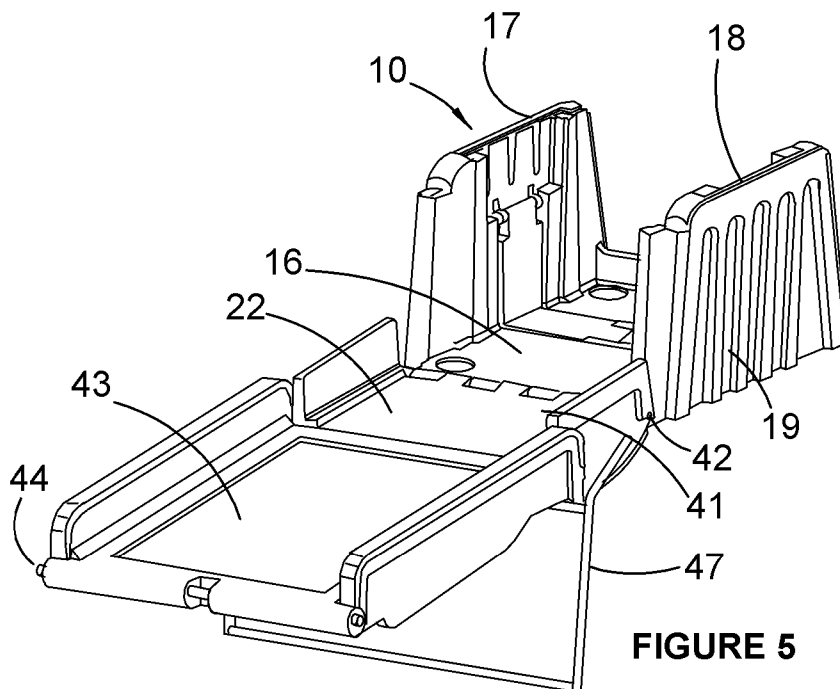


FIGURE 5

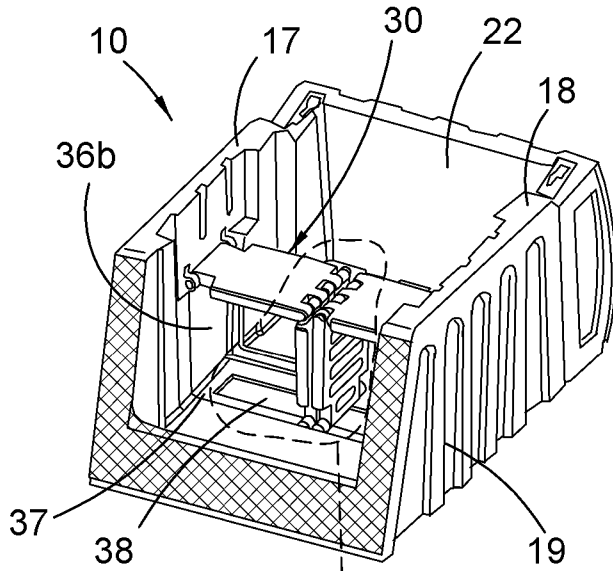


FIGURE 6

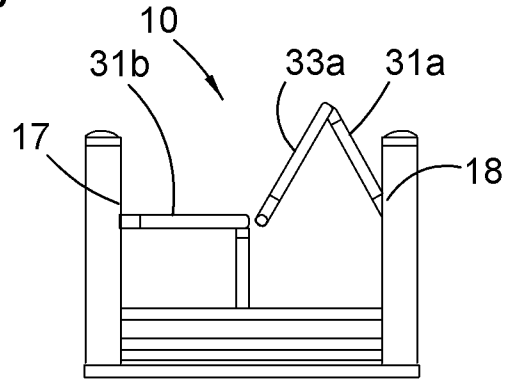


FIGURE 8A

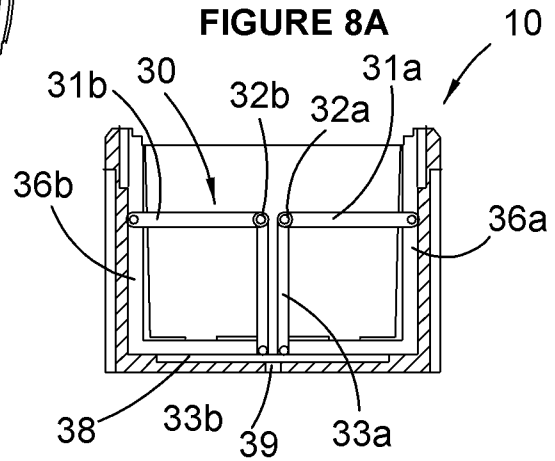


FIGURE 8B

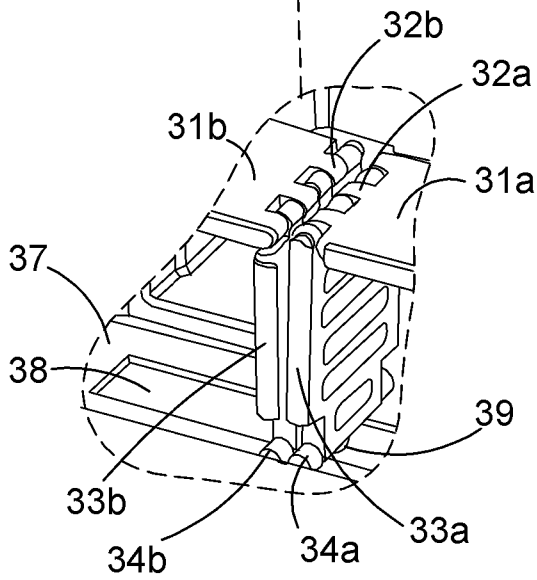


FIGURE 7

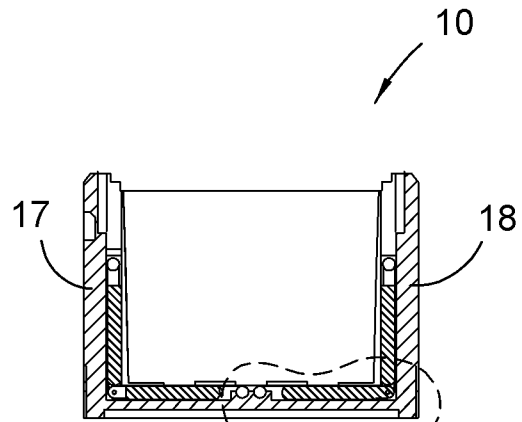


FIGURE 8C

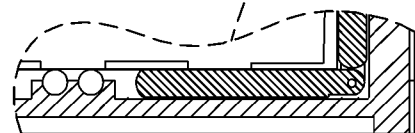


FIGURE 8D

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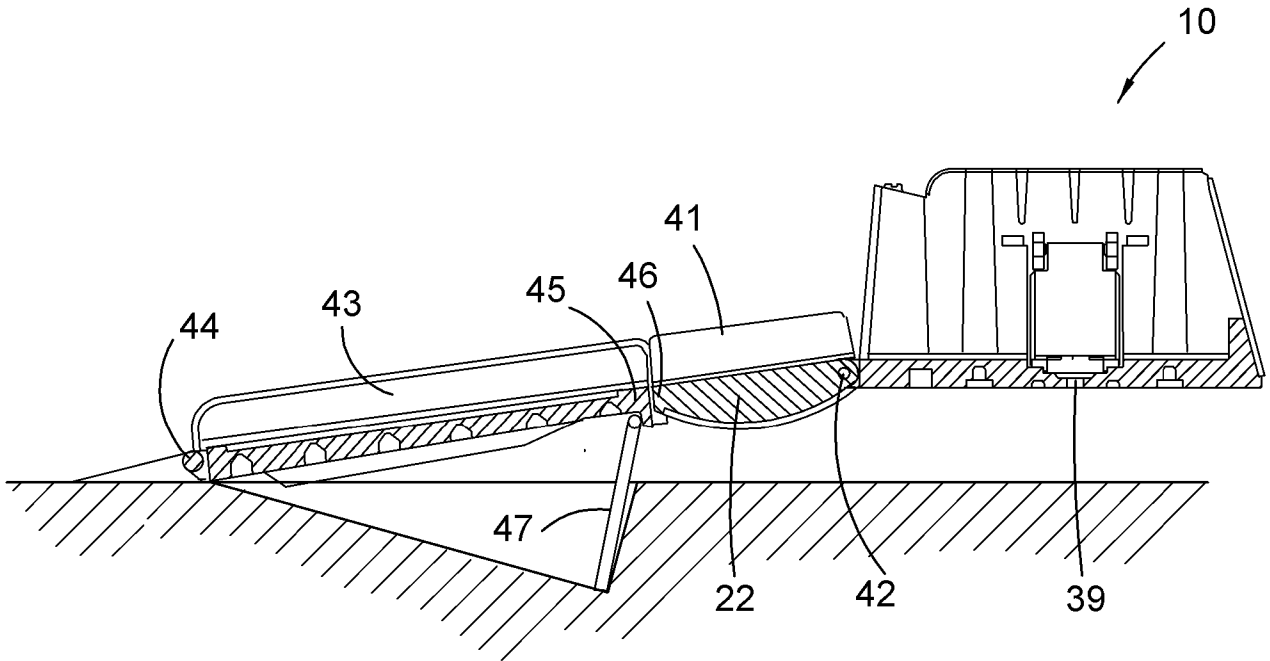


FIGURE 9

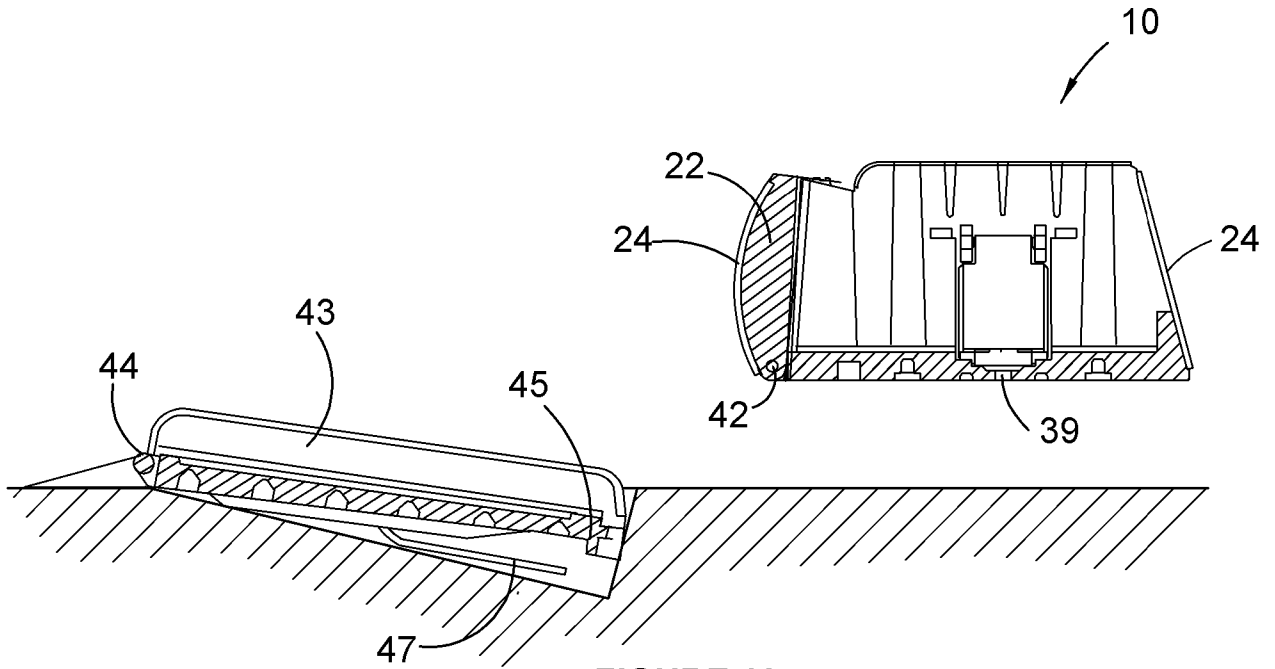


FIGURE 10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2014/000672

A. CLASSIFICATION OF SUBJECT MATTER A63G 9/00 (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) Espacenet&Google: Inventor/Applicant search; WPI&EPODOC: A63G9 IPC/CPC, A61G5 IPC/CPC, swing, ramp, plank, access, raise, lift, elevate, second, split, two, divide, separate, wheelchair, paraplegic, quadriplegic, handicap, disabled, special need, platform, base and similar 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	
<input checked="" type="checkbox"/>	Further documents are listed in the continuation of Box C	<input checked="" type="checkbox"/> See patent family annex
* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"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 1 September 2014	Date of mailing of the international search report 01 September 2014	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaaustralia.gov.au	Authorised officer Henry Bolton AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832507	

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.:
1-7

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

International application No.

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

PCT/AU2014/000672

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5938283 A (BABCOCK et al.) 17 August 1999 See e.g. col. 2, lines 42-46 and figs. 1, 2 and 5.	1-7
X	NZ 314119 A (FRANKLIN-BROWNE et al.) 28 July 1998 See e.g. page 9, line 28 – page 10, line 10, page 12, lines 4 – 10, page 15, lines 19-25 and fig. 1.	1-7
X	WO 2001/036062 A1 (JENWAY INDUSTRIES PTY LIMITED) 25 May 2001 See e.g. abstract, page 5, lines 1-3, page 6, lines 5-14 and figs. 1, 2 and 4.	1-4 and 6

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 7 are directed to a swing apparatus for persons confined to a wheelchair including the feature of a ramp with a first ramp member attached to the body of the swing and a second ramp member adapted to be attached to the ground. This feature is specific to this group of claims.

- Claims 8 to 12 are directed to a swing apparatus for persons confined to a wheelchair including the feature of a collapsible seating assembly mounted within the body of the swing. This feature 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 only feature common to these two groups of claims and which could provide a technical relationship among them is the feature of a body adapted to accommodate a wheelchair.

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

WO 2001/036062 A1 (JENWAY INDUSTRIES PTY LIMITED) 25 May 2001

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/AU2014/000672

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 5938283 A	17 August 1999	None	
NZ 314119 A	28 July 1998	None	
WO 2001/036062 A1	25 May 2001	AU 763359 B2	17 Jul 2003
		AU 1259201 A	30 May 2001
		AU 2003248427 A1	06 Nov 2003
		AU 2003248427 B2	28 Apr 2005
		CA 2388098 A1	25 May 2001
		EP 1229973 A1	14 Aug 2002
		EP 1229973 B1	19 Oct 2005
		US 6736732 B1	18 May 2004
		US 2005101394 A1	12 May 2005
		US 6997815 B2	14 Feb 2006

End of Annex

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

Form PCT/ISA/210 (Family Annex)(July 2009)